

In This Issue—Enclosed Cars Exhibited at New York

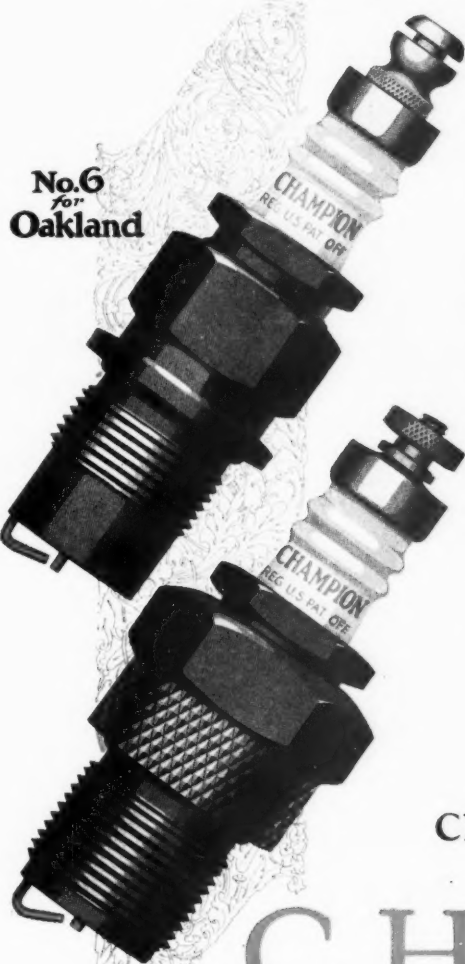
# MOTOR AGE

Vol. XLVI  
Number 15

PUBLISHED WEEKLY AT 5 SOUTH WABASH AVENUE  
CHICAGO, OCTOBER 9, 1924

Thirty-five Cents a Copy  
Three Dollars a Year

## Champion Spark Plugs Victorious In European Grand Prix



The dependability of Champion spark plugs under severe racing stress was strongly displayed in the French Grand Prix, at Lyons, France on August 3, in which the four prize winning cars were Champion equipped.

Campari, in an Alfa Romeo; Divo and Benoist in Delages and Wagner in another Alfa Romeo, all used Champions and not one of them changed a spark plug throughout the 503 mile race.

That Champion is the better spark plug is thus conclusively demonstrated in the greatest race of Europe, just as it has proved the fact in all the leading races in this country during the past year.

*The dealer who concentrates on Champions and urges their installation by the full set at least once a year, not only makes more money but he builds up good will and confidence.*

Champion Spark Plug Co. Toledo, Ohio  
Champion Spark Plug Co. of Canada, Ltd. Windsor, Ont.

# CHAMPION

*Dependable for Every Engine*



*Champion is the standard spark plug for Ford Cars and Trucks and Fordson Tractors. Recognized by dealers and owners for 12 years as the most economical and efficient spark plug. Sold by dealers everywhere.*

No. 3  
for  
Dodge  
Brothers

# MANLEY BRAKE RELINING EQUIPMENT

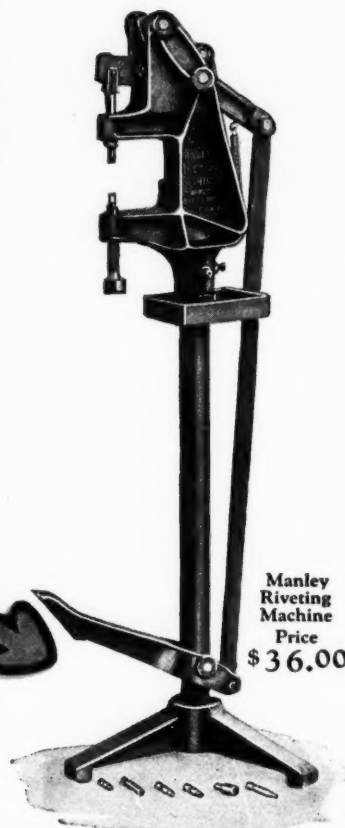
With this Manley Brake Relining Equipment you can punch out the old rivets, drill and countersink the new lining and rivet it in place on any size or type brake band or shoe from the smallest transmission band to the largest five-ton truck band. It makes no difference whether the bands are external contracting or internal expanding. *This Manley Brake Relining Equipment is a Complete Brake Relining Service Station in Itself.*

Both of these machines have been designed with the co-operation of brake relining experts and have been approved by the majority of the leading manufacturers of brake lining.



Manley  
Brake  
Relining  
Machine  
Price  
\$32.50

Pedestal \$7.50 extra



Manley  
Riveting  
Machine  
Price  
\$36.00

Complete as shown

## THE BRAKE RELINING MACHINE

The drill descends from above, and the countersink rises from below. The drill comes down thru the holes in the band or shoe and this locates the countersink automatically.

Like all Manley Equipment it is substantially built thruout.

Your own Portable Electric Drill can be used as the power unit, either quarter-inch size or Half-Inch Special.

Write for new booklet describing this machine in detail.

## THE RIVETING MACHINE

The Characteristic Manley Strength is apparent even in a picture. Built for the heaviest sort of service.

Notice the massive body and the reinforcing ribs.

It operates by means of a *Double Toggle*, twice as powerful as a single toggle.

The riveting action is scientifically correct--a comparatively light pressure at the start of the operation, constantly increasing as the diameter of the rivet is increased by the upsetting operation.

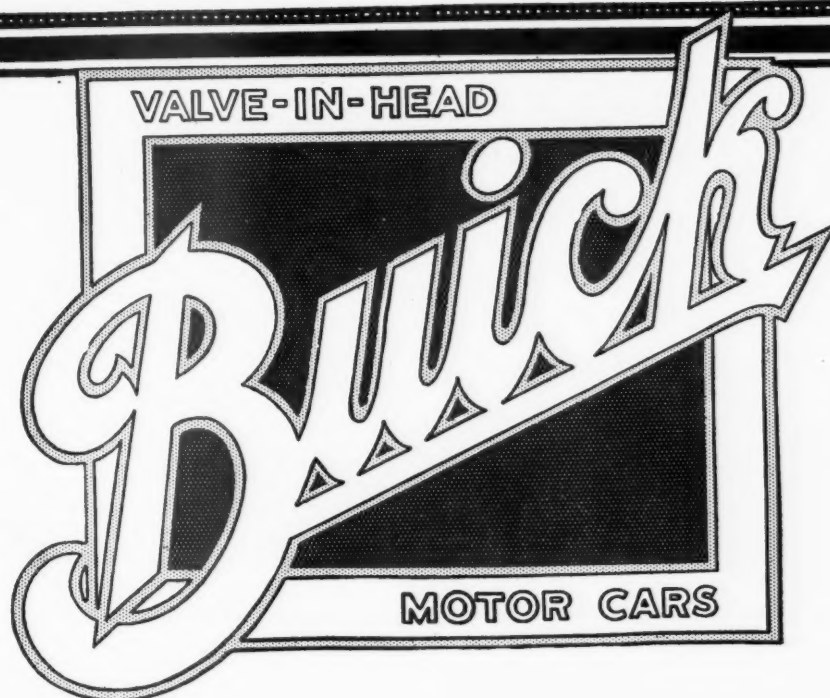
Eight rivet sets and anvils of the finest steel designed by riveting experts are supplied with each machine. Anvils are merely slipped into cup in the anvil screw, which can be adjusted for bands of different thicknesses.

# Get a Manley

Your jobber can supply you.

Illustrated booklet describing these machines on request.  
**MANLEY MFG. CO., YORK, PA.**





**The fundamental advantages  
which Buick provides are  
so thoroughly recognized  
that the public has bought  
nearly twice as many Buicks  
as any other car selling at  
one thousand dollars *and* above.**

**Buick dealers enjoy  
the prosperity that this public  
preference produces.**  
*Why not have your name on file?*

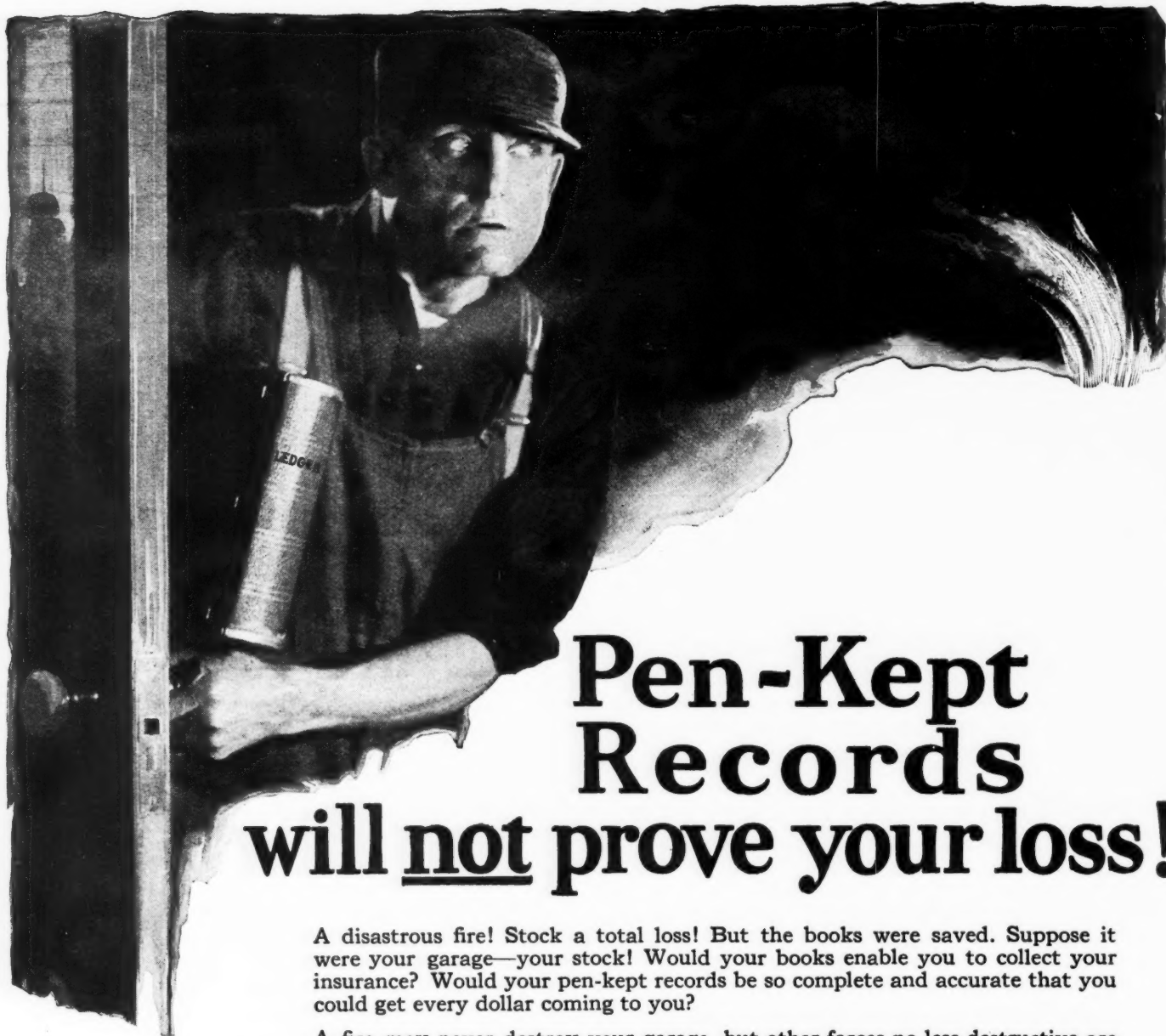
**BUICK MOTOR COMPANY, FLINT, MICHIGAN**

*Division of General Motors Corporation*

Pioneer Builders of Valve-in-Head Motor Cars

Branches in All Principal Cities—Dealers Everywhere

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**BETTER  
FIGURES  
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PROFITS**

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Machines

# MOTOR AGE

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Vol. XLVI

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## OFFICES

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Entered as Second Class Matter Sept. 19, 1899, at the Post Office at Chicago, Ill., under Act of March 3, 1879.

*"WITH the excellent product your company is building coupled up with the exceptional advertising campaign and dealers' helps for moving the merchandise, we believe that the Goodrich line is the most profitable for any dealer to handle."*

HIGHWAY AUTO  
COMPANY

Miles City, Montana

BUILD WITH GOODRICH  
for PERMANENCY

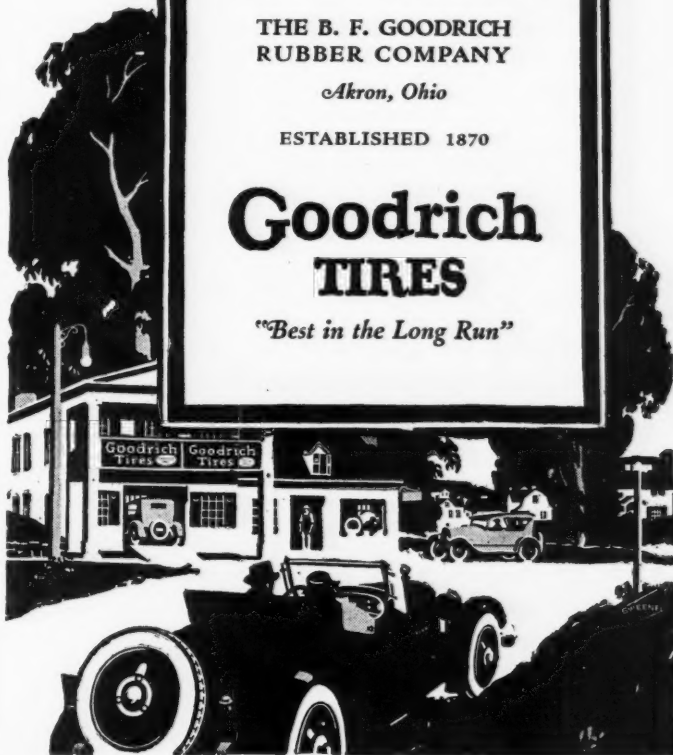
THE B. F. GOODRICH  
RUBBER COMPANY

Akron, Ohio

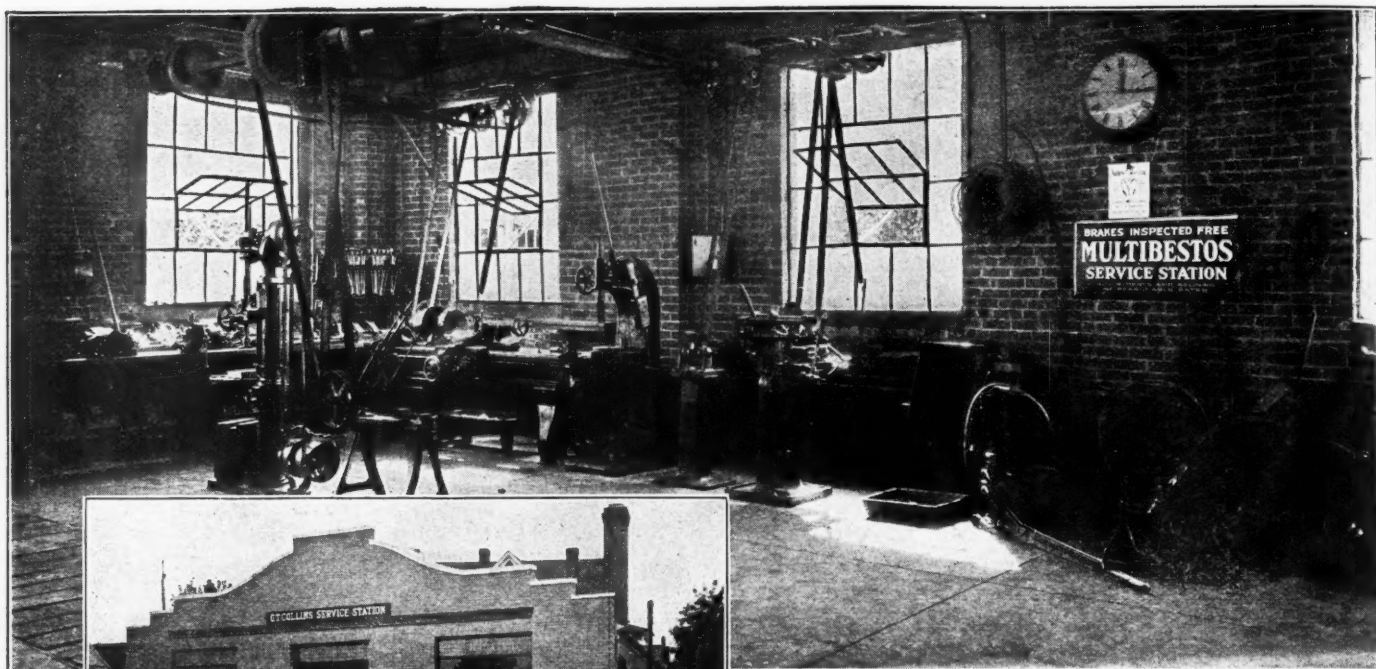
ESTABLISHED 1870

**Goodrich  
TIRES**

*"Best in the Long Run"*







*The modern building and shop interior of the G. T. Collins Service Station at Hartford, Conn.*

## "Never Varies In Quality"

—says George T. Collins Service Station

"WE have had experience with Multibestos Brake Lining for the past twelve years and after trying almost every other make and kind of lining we have adopted Multibestos as our standard. This is because we have found that Multibestos never varies in quality or in its fixed dimensions. In addition, we find that whenever we install Multibestos, the customer gets maximum service and security.

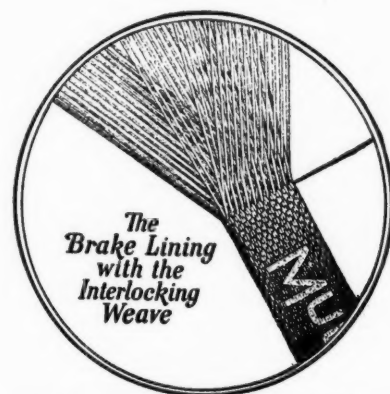
"We have also been using the Multibestos Relining Method for

the past three or four years, finding it most reliable and helpful."

(Signed) GEORGE T. COLLINS

Multibestos quality is unchanging because the materials used are always the best obtainable. And because we have never been able to find a better method of making brake lining than the Multibestos Interlocking Weave. These are the reasons for the widespread reputation of Multibestos for long life and dependability.

May we show you some of the ways in which we help automobile equipment dealers and service stations to increase their brake lining sales?



**MULTIBESTOS COMPANY**  
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# MULTIBESTOS

## THE BRAKE LINING

— with the Interlocking Weave —

# Public Confidence

*the greatest sales and advertising force in business*

Over two million people in the United States saw the new Studebaker cars the first thirty-six hours after they were announced.

This tremendous public interest is the result of universal public confidence in the products of Studebaker.

Any man who has had any experience in the automobile business realizes that the consensus of public opinion is always vastly in favor of Studebaker.

A dealer who handles Studebaker

products has this background of public confidence back of his efforts, not only on announcement day, *but on every day of the year.*

The word STUDEBAKER is a slogan in itself. Often it is sufficient, without another word, to convince the prospect that in a Studebaker car he has the ultimate in value and quality.

Perhaps there is an opportunity for you to connect your local good name for service and square dealing with the national name of Studebaker.



STANDARD SIX 113-in. W. B. 50 H. P.	SPECIAL SIX 120-in. W. B. 65 H. P.	BIG SIX 127-in. W. B. 75 H. P.
5-Pass. Duplex-Phaeton \$1145	5-Pass. Duplex-Phaeton \$1495	7-Pass. Duplex-Phaeton \$1875
3-Pass. Duplex-Roadster 1125	3-Pass. Duplex-Roadster 1450	
3-Pass. Coupe-Roadster 1395	4-Pass. Victoria . . . 2050	5-Pass. Coupe . . . 2650
5-Pass. Coupe . . . 1495	5-Pass. Sedan . . . 2150	7-Pass. Sedan . . . 2785
5-Pass. Sedan . . . 1595	5-Pass. Berline . . . 2225	7-Pass. Berline . . . 2860
5-Pass. Berline . . . 1650		

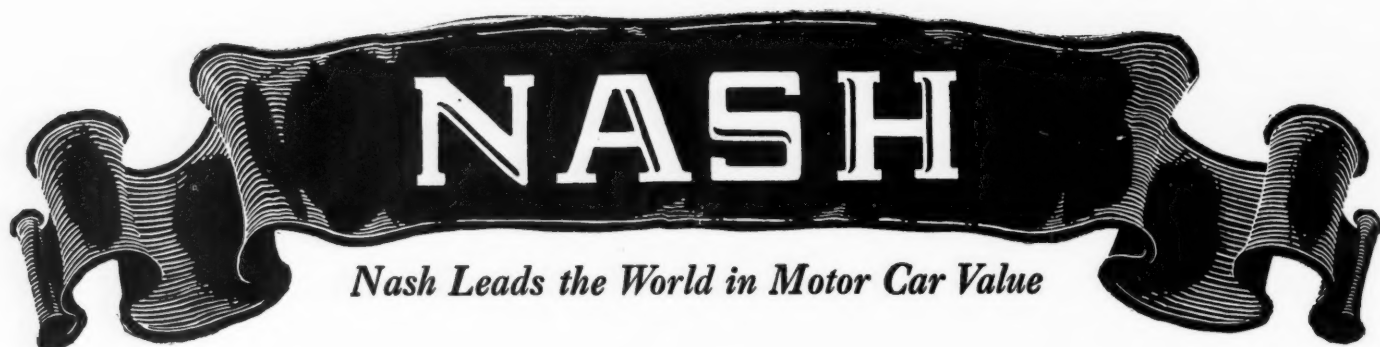


Studebaker Hydraulic 4-Wheel Brakes, optional equipment.

On all Standard Six models, with 4 disc wheels and spare rim, \$60.00 extra. On all Special Six and Big Six models with 5 disc wheels, \$75.00 extra.  
(All prices f. o. b. U. S. factories, and subject to change without notice.)

THE STUDEBAKER CORPORATION OF AMERICA, South Bend, Indiana

T H I S   I S   A   S T U D E B A K E R   Y E A R



## A National Tribute to Nash

### 7,800 Cars Oversold

### *Despite Record-breaking Output*

Though Nash production is at the highest level ever attained

—still the demand from every section of the country for these new Advanced Six and Special Six models has swept sales to a point so far beyond the best previous mark that unfilled orders total 7,800 cars.

Nothing that we might say could add the weight of a straw to this irrefutable evidence that men and women everywhere do see clearly in these new cars unparalleled excellence and value.

Happily, with increased output unreasonable delay is eliminated for those who act with promptitude in placing orders.

And deliveries will be made on the rotation basis which is fair to all.

In the meantime—October 5th to 12th is national Nash Oversold Week in honor of the extraordinary success of these new models, and Nash dealers everywhere are staging a special exhibition.

No motor car merchant in America can overlook or fail to grasp the pointed significance of this positive and powerful expression of purchaser preference for these new Nash models.

(717)

THE NASH MOTORS CO., KENOSHA, WIS.





## HOW MANY PISTON RINGS *Do You Use Annually*

According to authentic figures the average dealer will sell approximately 1,597 piston rings in 1924. This means approximately 133 installations per dealer during the year. Estimate your own sales and the profit.—Then here is an added profit, and service to your customers.

### INSTALL A RAMCO *With Every Piston Ring*

Accept no substitutes because Ramco Cushion Inner Rings alone are made with just the right thickness, length and number of crimps for the particular cylinder. Ramcos centralize the piston and cushion the piston rings into perfect conformity with the cylinder walls. Oil-pumping is stopped; piston slap and other noises are eliminated; compression is maintained. Order a set today and try them on the worst "pumper" in your shop.

*Your Jobber Has—*

# RAMCO

## INNER RINGS

RAMSEY ACCESSORIES MANUFACTURING CORP.  
ST. LOUIS, MISSOURI.

# The Good MAXWELL

## With the Tide

Hundreds of automobile dealers know, from bitter personal experience, the hopelessness of trying to make money by selling cars which have not obtained the active, interested support of the public.

They know that it is extremely difficult to get good men to sell such cars; and next to impossible to hold them when their men must start their sales talk *against* the customer's prejudice, instead of *with* his good will.

In modern merchandising, profits hinge upon the rate of turnover; and turnover hinges upon public confidence.

No good salesman will buck public opinion; he knows, too well, that his profits and his success come from going with the tide of public opinion.

The fact is, of course, that no dealer, however strong he may be, can hope

to win the local public to a car, if the manufacturer himself has been unable to do it on a national scale.

Today men are analyzing and weighing one line as against another, more critically than ever.

And once a man does this, he cannot help but be impressed with the fact that nowhere in the industry can he find so attractive and profitable a line as Maxwell-Chrysler for the reason that these two cars are much in people's minds, and that the proof of that is in the ever-

increasing demand for these cars.

The proof of Maxwell-Chrysler progress and profit is to be found in the rapid increase in its organization, and especially in the type of men it is attracting—men like R. H. Collins, Guy O. Simons, Walter F. Wright, L. E. Frey.

If you are interested, write or wire for details.



*All Maxwell and Chrysler dealers are in position to extend the convenience of time-payments, on a plan that is attractive to the buyer.*

MAXWELL MOTOR SALES CORPORATION, DETROIT, MICHIGAN  
CHRYSLER MOTOR CORPORATION, DETROIT, MICHIGAN  
MAXWELL-CHRYSLER MOTOR COMPANY OF CANADA, LTD. WINDSOR, ONT.

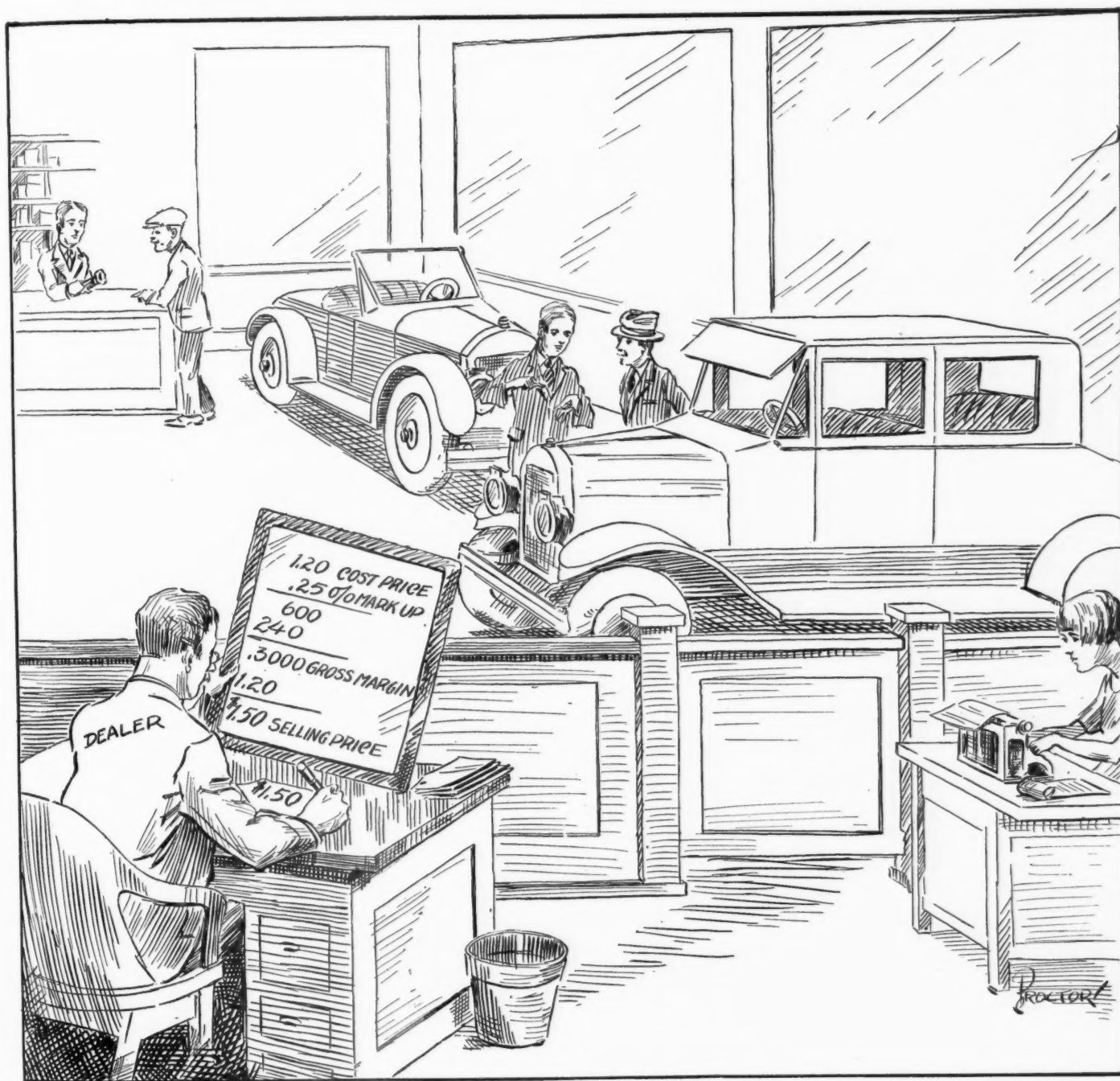
# The Chrysler Six

# MOTOR AGE

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Chicago, October 9, 1924

No. 15



Where the Profit Is Determined



# How to Determine Mark Up for Profit

*The Percentage Added to the Cost Price Must Be Enough to Provide for the Various Expenses Incurred in Connection With Operating the Business, in Addition to a Net Profit*

By JAMES V. MALONE

*Profits vs. Volume—No. 4.*

A GREAT deal of merchandise in the automotive field, as in other fields, is sold at retail at established prices which are set by the manufacturer or other wholesale distributing agency and nationally advertised. The automobile itself is the best example of this. The price that the ultimate consumer is expected to pay for a particular car is fixed by the maker and although the dealer might sell it at a lower price he certainly cannot succeed in getting a higher price for it unless he adds something to the vehicle itself to justify the additional price.

The question of marking up the price of merchandise for sale at a profit is, therefore, limited to a certain extent in the case of established retail prices. Instead of buying goods at a quoted price and then marking up the resale price sufficiently to yield him his rightful profit the merchant buys at the list price less a certain discount and is expected to sell at the established list. The discount varies according to the product and the manufacturer, but whatever it is, it is expected to allow margin enough for the merchant to make an adequate profit. In the case of automobiles the discount may be 20 to 30 per cent, or more, but with some automotive merchandise it is much larger. The merchant who buys goods at a list price less discount can readily figure the cost price to him and with this as a basis he can easily figure the percentage of gross represented by the established selling price. In this case, where his freedom to mark up is limited, it is up to him to so conduct his business that a reasonable net profit can be garnered out of the gross.

But in any case the principles of marking up merchandise for sale at a profit should be understood by the good automotive merchant. If he thoroughly understands the principles he will always be able to so control one or more of the financial factors of his business as to take care of net profit.

## Definitions You Ought to Know

Operating expenses (or overhead), net profit, gross profit and mark-up are the figure pictures of every business. They are terms with which every merchant should be familiar. Not only should he be familiar with them as mere words to be used in speaking of uncertain things, but he should know them in their minutest application to his business. They are the four vitals of every selling undertaking and it is with them that we shall deal in this the fourth of the series on "Profits in the Automotive Business."

Their definitions are as follows:

Operating expenses (or overhead) is the amount of money spent to conduct the business but does not include the price of merchandise.

Net profit is the amount of money earned by

the business; *not* the proprietor.

Gross profit is the sum of the operating expenses and the net profit.

Mark-up is the percentage figure by which the cost of an article is multiplied to get the amount which should be added to the cost to know the correct selling price, a price which will yield the desired gross profit.

To figure the proper rate of mark-up, the dealer takes into consideration his sales. He bases his next year's estimate on what last year produced. Or, if he is just starting in business, the forthcoming year is estimated as closely as possible on conditions in the community. He then finds his overhead and the net profit he expects the business to earn.

Let us say, for example, that the merchant's sales for the past year were \$50,000, his operating costs \$7,500 and his net profit is to be 5 per cent of his sales, or \$2,500. The problem is how much shall he add to the cost of his goods?

## Where Mistakes Are Made

It is first necessary to get the gross profit which is the total of the operating expenses and the net profit:

\$7,500	Operating expenses
2,500	Net profit

\$10,000 Gross profit

To find the percentage the gross profit is of the sales, he divides gross profit by sales:

\$50,000	)	\$10,000.00	( 20% gross profit
		10,000.0	
		0	

Thus it is shown that in order to make operating expenses and a net profit of 5 per cent, he must earn a 20 per cent gross profit. The question then is: What must the mark-up be to give him this 20 per cent?

Here is where many merchants make a mistake. They assume that the percentage of gross profit and mark-up are the same thing. This confusion is caused by the fact that the *amount* of mark-up and the *amount* of gross profit are the same. They both are the difference between selling price and cost and they both are called "margin."

The difference is in the fact that the mark-up is figured on *cost* and the gross profit on the *selling price*. Let us see why this method of taking 20 per cent of the cost of an article and adding it to the cost to obtain the selling price is wrong.

Assume that the cost of an article is \$1.20 and the gross profit desired is 20 per cent.

\$1.20	Cost	\$1.20	Cost
.20	% gross profit	.24	margin
\$2.400	margin	\$1.44	selling price

This looks right but the iron rule of school days—"work it backwards"—shows the error.

\$1.44 Selling price  
.20 % gross profit  
\$1.280 margin

\$1.44 Selling price  
.29 margin  
\$1.15 cost

It can readily be seen that this method of marking-up would soon put any business in the sheriff's hands. The difference of 5 cents on every sale would soon start another 5 and 10-cent store chain—for someone else beside the dealer. The correct way of arriving at the right selling price is as follows:

The selling price of any article is always 100 per cent and this 100 per cent includes the gross profit, therefore if the selling price is 100 per cent and the gross profit 20 per cent, the cost of the goods must be the difference between the two, or 80 per cent. The cost in this case is \$1.20, or 80 per cent of the selling price. Now, to find the selling price it is first necessary to get 1 per cent:

.80 ) \$1.20 (.015  
80  
—  
400  
400

One and one-half cents is then known to be 1 per cent of the selling price. The selling price, of course, is 100 times one and one-half cents, or \$1.50.

The reason why so many dealers in automotive transportation (and in many other lines, too) are continually complaining that they are making no money is because they ignore this method of marking their prices. Many are governed by what the neighboring dealer does—others find it necessary to sell goods at "plundered" prices to keep apace of the gyp who sells at any price that occurs to him, apparently.

#### *Sells 'Em Something Else*

Others in an effort to stimulate buying interest will announce sales where they will move a quantity of merchandise at lower prices. This they do without considering what they are going to use for money to pay the overhead and a profit to themselves. These price slashing contests so often engaged in by dealers eventually result in one or more closing shop because of the oppression of the other. The gyp who places a "plundered" price on a standard article does so for advertising purposes only.

Nine times out of ten when such a merchant has succeeded in stimulating a buying interest, he will direct the

attention of prospective customers to a substitute article which sells at the same price as he has marked on the standard goods. A line of talk that is none too ethical often results in the sale of the substitute—at a neat profit. Thus the gyp can go on while the honest merchant who does not want to employ such tactics, has to meet an advertising price competition that often results in his undoing, unless he sticks religiously to the one proven way of making a profit—that set down above.

There is another line of business in which the "plundered" or substitute line has built and wrecked fortunes: the drug store line of cosmetics, patent medicines, etc. The honest drug merchant, however, the one who carries the real article at the price that gives him an honest profit, has ceased to worry about the gyp, for the public has as rapidly found out that it is better to buy quality in a drug store as they are finding out the same thing about automotive transportation.

#### *Must Be Reckoned With*

These factors, it is true, are to be reckoned with when the dealer makes his stand for business, but he should also remember that engaging in business for one's health is about the unhealthiest occupation known. No one will deny any one an honest profit and if the automotive merchant sets out to get it, he will, if he persists.

Let us go back to the problem that we worked out above and prove by the "work it backwards" rule that it is right:

\$1.50 Selling price  
.20 % gross profit  
\$1.3000 margin

\$1.50 Selling price  
.30 margin  
\$1.20 cost

All of this figuring, however, is not necessary each time it is desired to get the correct selling price. But it is well to know the principle of the problem and to know *why* before resorting to the method made easy by mathematicians. The "Table for Determining Mark-Up," shown in connection with this article will tell you at a glance just how and what to do.

With the aid of this table it is only necessary for the merchant to figure the rate of gross profit. Having done this, he finds the corresponding figure in the left-hand column of the table. Then by multiplying the cost of the article by the corresponding percentage figure in the right-

(Continued on page 20)

Table for Determining Mark-Up

Per Cent	Per Cent
4%	5
7	8 1/2
9	10
11 1/2	12 1/2
13	15
14 1/4	16
15	17 1/2
16%	20
20	25
23	30
25	33 1/3
26	35
27 1/4	37 1/2
28 1/2	40
31	45
33 1/4	50
35 1/2	55
37 1/2	60
39 1/2	65
40	66 2/3
41	70
42%	75
44 1/4	80
46	85
47 1/2	90
50	100

Per Cent Overhead Expense	Per Cent Net Profit Desired											
	5	10	15	20	25	30	35	40	50	60	70	80
15	25	33	40	54	67	82	100	122	186	300	566	1900
20	33	40	54	67	82	100	122	150	233	400	900	
25	40	54	67	82	100	122	150	186	300	566	1900	
30	54	67	82	100	122	150	186	233	400	900		
35	67	82	100	122	150	186	233	300	566	1900		
40	82	100	122	150	186	233	300	400	900			
45	100	122	150	186	233	300	400	566	1900			
50	122	150	186	233	300	400	566	900				

The table at the left is for determining mark-up. In the left column is the gross profit percentage figure. Directly opposite is the percentage figure by which the cost should be multiplied to determine the correct margin, which when added to the cost gives the selling price sufficient to cover the gross profit.

At the right is shown the table for figuring special mark-ups. In this table the per cent of overhead expense is in the left column and the rate of net profit in the column across the top. If a 20 per cent net profit is desired on a certain article and the overhead expense amounts to 30 per cent, the rate of mark-up will be found where the two columns come together; in this case 100 per cent or double the cost.



# Paying for Automobiles From Income

*How the Finance Company Operates as a Connecting Link Between Dealer and Customer—Results Justify Time Payment Plan*

By JOHN R. McNAMARA

*Executive Secretary, Finance Associates, Inc.*

**P**ARADOXICALLY, this exposition of facts opens with a "Fish Story".

According to the simple presentation of Edward Manley, economist, our remote forbears dwelt along the sea shores gorging themselves with raw fish when, fortuitously, a storm would wash upon the sands abundant supply, and frequently suffering a brief period of famine while awaiting another gratuitous meal.

It seems that one day there came to one of these atavistic ancestors of ours the glimmering of an idea, and during the storm, while his fellows were gorging, he labored energetically to store away huge supplies of fish. Later, during the subsequent famine, knowing of his wealth, his fellows would approach him with requests for food. "Yes", he would reply, "I will give you fish, but first you must make me a dug-out canoe with which I may get more fish."

From this pure example of barter and exchange it was but a step to a true credit relationship—the immediate delivery of food from his store, to be paid for later when commodities acceptable in payment should be available.

From this crude beginning there developed, through innumerable phases, our present intricate credit system, until now, according to the National Association of Credit Men, 95 per cent of American business—approximating an annual volume of \$350,000,000,000—is transacted on a credit basis; and a constantly increasing proportion of this stupendous total is transacted on the installment, or time-payment basis. Furniture, sewing machines, typewriters, phonographs, radio sets, pianos, fur coats, jewelry, kitchen cabinets, education are purchased—even taxes and insurance premiums are paid for—on the installment basis.

## *Seventy-Five Per Cent of Cars Bought "On Time"*

At the present time, approximately 75 per cent of all passenger cars and 90 per cent of all trucks are purchased "on time"—including expensive cars, as well as the cheaper ones. In 1923 there were sold in the United States 3,644,000 automobiles, representing a money value of \$2,955,284,000—an average of \$811 per car—for \$1,383,475,220 of which, or approximately 75 per cent of the total amount the American people obligated themselves to future payments. With the figure of \$900,000,000 as a conservative estimate (one estimate is as high as \$1,500,000,000) of the automobile paper outstanding at the present time, and with an estimated automobile production for 1924 of more than 3,000,000 cars, it must be evident that automobile financing is a tremendously important activity in the

automobile industry and in American business generally.

A great deal of unfavorable criticism and propaganda have been directed against automobile finance companies, in some cases by men who felt that the depression in their own business was to a great extent due (at least indirectly) to the operations of finance companies; in others by men, perhaps sincere and well intentioned, but lacking in a first-hand knowledge of reputable finance companies and their operations.

In a consideration of the question, the subject divides itself into these aspects: (1) Why ought the American people to have facilities for purchasing automobiles out of income? (2) Why do the American people have facilities for purchasing automobiles out of income? (3) What has been the effect of automobile financing on business, economic and social conditions? (4) What safeguards exist against the potential unfavorable influence of too liberal credit accommodations?

(1) *Why ought the American people to have facilities for purchasing automobiles out of income?*

The farmer plants his crop in the spring and cultivates it through the summer, in most instances requiring the usual local credit accommodations to carry him through this non-productive period. The larger part of his annual income is not received until fall, after his crops have been harvested. Is it fair to ask him to wait until that time before purchasing an automobile, thereby depriving himself and his family of the pleasure, convenience, profit and necessary recreation which a car affords?

The city buyer who purchases a car and pays for it in monthly installments is usually a man of steady position and fixed monthly income. He invests in a

car as a means of keeping his family happy and content, of affording them and of keeping them together, rather than leaving each one to his own devices for recreation and pleasure. Just as he mortgages his property through a bond issue to supply the wherewithal for business expansion, he mortgages a part of his income to supply his family with recreation and to improve somewhat his standard of living.

Before the finance company existed, the automobile was by far the largest unit of sale ordinarily offered for cash only—in fact practically every commodity costing \$100 or more could be purchased on time. Why should not the automobile be susceptible of the same method of marketing? It affords the wage earner an independent means of transportation and an inexpensive means of recreation; it enables the man with only a moderate income to raise his standard of living; it makes our suburban districts readily accessible to city workers—in fact (as some one, I do not at the moment recall who, has very aptly put it): "Anything adding to health, happiness and well-being over a considerable period, is an investment"—and the automobile certainly has fallen within that category and should be regarded as such.

Yet it is a psychological fact that even with all these benefits in prospect, 95 per cent of the potential automobile buyers of this country will not save in advance money enough to purchase a car for cash—which brings us logically to the next aspect of the situation.

(2) *Why do the American people have facilities for purchasing automobiles out of income?*

The automobile now enjoys so wide a distribution and so important a place in the social and economic scheme of present day existence that it has long since passed into the utility class and should no longer be regarded as a luxury, but rather as an economic necessity.

Potential buyers are no longer inhibited by the old misconception that buying on credit—or, more exactly, "on time"—is a discredit to them. Almost every man at one time or another avails himself of credit facilities—and it may be perfectly possible that a man, unquestionably able to pay cash, prefers to pay the monthly installment out of income, rather than disturb his investments. Or, perhaps, he feels that his own wealth will be more profitably employed in his own business and therefore retains it for that purpose, using the facilities available to him through the automobile finance company for the purchase of his car.

Another element that has been a fac-

## *Safeguards Against Danger of Overbuying*

**A**POPULAR objection to the time payment plan of selling automobiles is that cars will be sold to persons who are not able to afford them. The experience of finance companies, as related by the writer in the accompanying article, is that this seldom happens. The conservative companies engaged in financing retail sales of automobiles recognize that approximately one-third of the purchase price must be obtained as a down payment and that usually the payments should be completed in not less than 12 months. Where this rule of safety is applied the question of overbuying takes care of itself.



tor in the situation's being what it is, is that practically every individual has an ambition to own a car and will work harder and save more money with that in view than under almost any other stimulus; hence, practically every individual is a potential automobile buyer. That being the case, there is little to fear from unfavorable propaganda, as no propaganda on earth can stifle such an overwhelming demand. The growth of finance companies has been phenomenal, it is true, but they have been created by this public demand and, as Mr. McMillan, of the First Acceptance Corporation of Milwaukee, stated in a recent paper; "The greatest financial genius could not put an automobile finance company across, unless there were a public demand for its service."

Probably the outstanding reasons for the existence of the present system of buying automobiles on the installment plan are: (1) General prosperity and employment; (2) the combination in the automobile of high value and low price, possible because of mass production and keen competition among manufacturers, distributors and dealers. Steady and assured employment justifies purchases "out of income".

Another factor in the increasing sale of automobiles is the tendency of business activity to centralize in the cities, forcing a constantly increasing proportion of the nation's population into the city; and the cities' populations, augmented by these workers must, perforce, expand more and more into the suburbs, where the automobile becomes a requisite to comfortable existence.

### (3) What has been the effect of automobile financing on business, economic and social conditions?

In discussion of the subjects of the two preceding sections, the subject of the present section has been touched upon to some extent. There are, however, other results of automobile financing operations that are noteworthy.

Man, it has been pointed out, is a creature of habit, and the habit of thrift imposed and fostered by the necessity of meeting regular periodical payments on his car becomes established and is reflected in his savings account. The following tabulation forms an interesting picture of this one result:

	1912	1922
Savings deposits .....	\$8,433,711,000	\$17,301,012,000
Car registration .....	994,000	12,293,014
Number of building and loan associations .....	6,273	9,225
Number of members in building and loan associations .....	2,516,936	5,809,088
Investments of members in building and loan associations .....	\$1,137,600,608	\$2,890,764,621
Life insurance premiums pd. \$	681,900,000	1,672,099,924

The purchase of an automobile on time payments fosters the habit of acquiring property; frequently, their automobile is

### Economic Reason for The Time Payment Plan

**FROM** time to time the automotive industry has been criticised for the prevalence of the time payment plan in the sale of automobiles. In this article the writer sets forth sound economic reasons for the popularity of this method of buying motor vehicles. The fact that approximately 75 per cent of all cars sold are paid for over a period of months out of income as received is in itself indisputable evidence of the public acceptance of this method of merchandising.

the family's first effort to acquire property, and once the habit is established, it persists with the result that a home, furniture, and frequently securities comprising a snug little estate are acquired by similar methods. In the case of the automobile, the monthly payments come easier than in the case of the latter mentioned property, due to the fact that the automobile provides recreation and pleasure and frequently renders available for its purchase income previously expended for entertainment. During the period covered in the tabulation of comparative savings and investments (1912-1922) above shown, the public have saved and paid for fourteen billion dollars worth of automobiles in addition to the greatly increased savings and investments in homes and in securities.

It may be added, as applying to this phase of the discussion, that building activity at the present time is probably greater than ever before in its history—which would seem also to be significant.

Arthur Brisbane recently made a few pointed remarks anent the attitude of some bankers toward large automobile production:

"How long will it take bankers to understand that more automobiles mean, not extravagance, but more efficiency, more health, more saving of time, higher production at less cost; longer life?"

"Every dollar that bankers put into automobile production is a dollar invested in greater prosperity and greater happiness."

"Isn't that a good investment?"

"Bankers wouldn't worry if they found corn fields producing more corn, why worry because automobile factories are producing more automobiles?"

### (4) What safeguards exist against the potential unfavorable influence of too liberal credit accommodation?

We have pretty well established the point that the average American's ability to purchase automobiles on time payments is socially and economically desirable. Yet the average automobile dealer seldom has resources which enable him to offer his customers credit facilities; and, on the other hand, the amounts involved in the notes which evidence the transactions are so comparatively small, and the detail of collecting those notes so specialized and intricate, that the banks are not equipped to carry this class of business. Consequently, the automo-

bile finance company steps into the breach as a stabilizing influence and, by collateralizing this deferred payment paper, stands between the purchaser and the dealer, on the one hand, and the bank on the other, affording the former an outlet for his paper and the latter protection of its capital and its depositors.

Improper, dishonest, inexperienced or inefficient handling of this business would unquestionably be detrimental to business, but the reputable finance company is conducted on a very intelligent basis. The matter of maturity of paper purchased is generally dependent upon the rate of depreciation of the chattel by which it is secured. A piano lasting for years may frequently be purchased with a 5 per cent down payment, payments on the balance running over a period of 2 or 3 years; whereas, in the case of ordinary furniture, which depreciates far more rapidly, a substantial down payment is required and not usually more than a year allowed in which to pay. An automobile depreciates on an average of about 25 per cent a year, consequently the common practice among finance companies to require a down payment of from 25 to 33 1-3 per cent, allowing from 6 to 12 months for the payments of the remainder.

Careful adherence to this policy results in sound conservative conduct of business, the finance company so conducted enjoying a turn-over every 4 to 6 months, and in most instances being in position to liquidate in 90 days, using only actual cash on hand and collections on paper held. And a properly conducted finance company which buys only the paper of people really entitled to credit will show almost 100 per cent of its receivables paid when due.

### Not Every Man Can Buy "On Time"

Not every one can buy on time; but only those who are able to stand a very careful credit investigation. This investigation, in the last analysis, seeks to learn two things concerning the prospective automobile buyer: (1) Will he pay half if he can? (2) Can he? The usual procedure of a careful credit man in answering these questions to his own satisfaction need not be gone into. The finance company, in safeguarding its own interests, serves important functions in addition to enabling the buyer to purchase a car on time: Its credit requirements are such as to guide him in the selection of a car best suited to his earning capacity and also to penalize overbuying, intentional or unintentional. The policy of one-third down, on which finance companies as a rule insists, in addition to the fact that the finance company retains a first lien on the chattel, places the buyer in a position, where, if he commits the indiscretion of over-buying, he may—before all costs are defrayed—lose all that he has invested. So, considering all phases of the question, when a man receives the approval of a reputable finance company, he may be pretty certain that his credit is established and that he is entitled to accommodation.

# Some Pertinent Facts on Cylinder Reconditioning

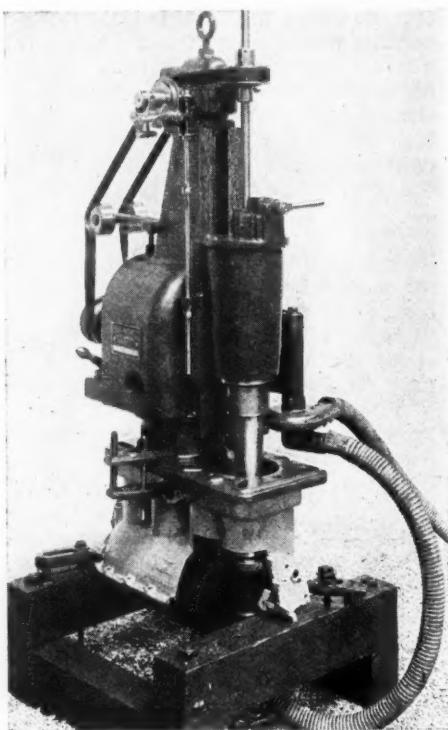
*All Types of Equipment Whether Grinders, Reboring Tools or Hones Give Good Results if Properly Selected and Used—Economic Side of Situation Must Be Considered When Buying Equipment*

By B. M. IKERT

(This is the fifth article of a series dealing with useful shop equipment)

EVERY automotive shop at some time is called upon to fit new pistons and rings to an engine and invariably such a job first calls for a reconditioning of the cylinder bores. We know that cylinders wear so that the bores are tapered or out of round and the best pistons and rings in the world are no good when installed in such bores. The job, then, is one of taking out the taper and making the bores perfectly round, practically speaking. All of which calls for some kind of equipment for doing this work accurately and economically.

Generally speaking there are three methods in vogue for reconditioning cylinder bores. They are, grinding, reboring or reaming and honing. Now, in choosing equipment for cylinder work it is essential that the shop know something about the people with whom it is doing business. There is an economical side that must be considered and while it is not intended in this article to champion the cause of any particular method of cylinder reconditioning, we believe it is necessary to present here some of the results of investigations carried on in the field. Briefly, it might be said that all the above mentioned methods are used



*A portable cylinder grinder which has been placed on the market recently. In using this grinder it is necessary to remove the block from the car. Pistons also can be ground on this machine*

satisfactorily and, it has resolved itself largely into a matter of personal preference. And, the customer has something to say.

Take cylinder grinding, that is, where the block is removed from the car and shipped away. It is a slow process and usually means high cost. Furthermore, many will tell you that they are not certain that cylinder regrinding is always carried out in as accurate and satisfactory a manner as the expense involved would warrant one to expect.

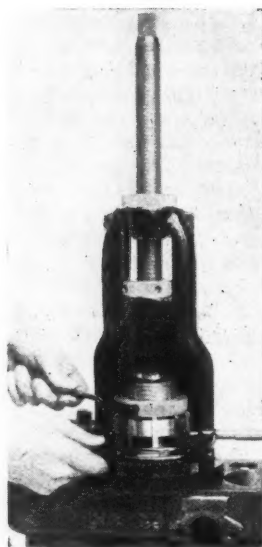
Take the economical side of it. The people who own and drive low and medium priced cars are not the ones demanding reground cylinders for the simple reason that they will not pay for the job. The necessary transportation of the block to and from the shop to the regrinder, also the necessary commission that must be added to the price by the shop means a high cost to the car owner.

This has had the result that many engines which ought to have the cylinders reconditioned are running inefficiently. Most people are not willing to pay for a job that takes in a complete dismantling of the engine.

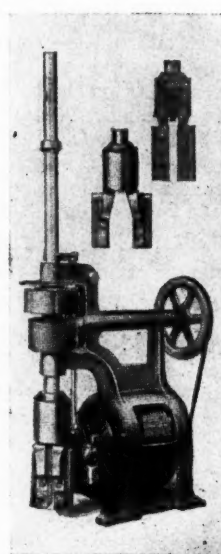
The above condition has brought about quite a tendency for the better shops to equip themselves with inexpensive equipment for reconditioning cylinder without having to take the block from the car.

The majority of these shops have provided themselves with a reboring machine, a reamer and a honing device. From all that we can gather in the field some really excellent results are attained and at a price the customer is willing to pay, by first using a reboring tool and then finishing up the hole with a hone or burnishing tool.

We have found that this combination of equipment when operated by the average competent mechanic to produce satisfactory bores in a reasonable length of time, accurately, and at a price on which the customer does not kick. These reboring tools when operated by an electric drill having a power drive attachment, will rebores the average cylinder in less than 30 minutes and a few minutes with the burnishing tool will produce an ex-

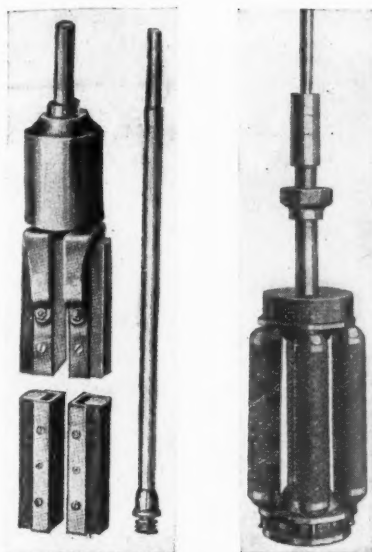


*Here is shown the method of mounting a cylinder reboring tool on the block. Such equipment can be operated by hand or by the investment of a little money in a power attachment*



*A honing machine, used for truing up cylinder bores. For taking out very small amounts of metal these outfits are useful and they are especially useful to supplement the reboring outfits*





Right: A close-up of a cylinder hone. This shows the carborundum stones in the holders. Left: This is a burnishing tool which when correctly used imparts a very smooth finish to the cylinder walls. A burnishing tool, however, should not be used to take out a great amount of metal

cellent surface, both as regards its roundness, straightness and smoothness. Incidentally, the public, we believe has been led to think that the highly polished or gun-barrel finish of a bore is indicative of great accuracy, whereas, such a cylinder still might be tapered, not square with the center line of the crankshaft or have other variations.

A good many shops are using a burnishing tool to remove slight deflections in the cylinder wall and where the diameter is not increased in excess of .004 or .005 in. One of these burnishing tools is used with a compound which loses its abrasive action in a limited time, does not charge the cylinder walls and is harmless should any of the material be inadvertently left in the oil pipes or bearings. One service station recently burnished six cylinders of a block and fitted new pistons and rings in 17 hrs.

Recently there was brought on the market a portable grinder that so far as price is concerned is within the scope of the automotive shops, especially those handling a large volume of business. With this grinder it still is necessary to remove the block from the crankcase, but one has the advantages of the more or less conventional stationary internal grinder at a much lower cost. This grinder also has a piston grinding attachment, which naturally adds to the usefulness of the machine. The price of this machine is about \$650.

Unfortunately the mechanics in most shops are not familiar with grinding, inasmuch as this is really a machine shop operation. A machinist knows more about grinding operations than the men who scrape bearings and fit rods and consequently unless the shop can boast of a machinist the grinding operations may be faulty. Because a shop installs an expensive grinder is no sign that the work turned out will be accurate. A

round and straight hole even of dull finish is better than a highly polished one if the latter is tapered or not square with the crankshaft.

We believe most shops find it profitable to buy some sort of reamer or reboring tool for cylinder work, supplementing these with a hone or burnisher. The reason is obvious. A good reamer or reboring tool will cost about \$300 and a hone \$20.

You will find the makers of reboring tools and reamers for the most part urging those who have hones to keep them for use with the reboring or reaming outfits. And if a shop has no hone these same makers will suggest getting one.

It must be remembered that most engines today are fitted with detachable heads and when one observes the blocks on the floor of a cylinder regrinding establishment it generally turns out that blocks with detachable heads are much in the minority. Some concerns doing this class of work state that about 80 per cent of their work is on closed end engines. This, however, according to our

own investigations seems to be a little high. The big point is that with detachable head engines it becomes a relatively easy matter to recondition the bores so long as the block does not have to be removed. The latter fact, we believe, is the one big item that has stood in the way of cylinder regrinding.

The shop must also realize that the advent of the light alloy piston together with better blocks has made possible operating engines over very long periods without the need for reconditioning the bores. Where such bores are but a few thousandths of an inch off they can be put in shape again by reboring and honing, or as has been done by many shops, merely by honing and burnishing.

It must be remembered also that when it comes to recondition the bores of an old block it often is cheaper to buy a new block than it is to true up the old bores and fit new pistons and rings. Hence, when it comes to choosing equipment for this class of work it pays to make a careful analysis of the potential work and buy accordingly. It will prevent machinery standing idle.

## That Garage in a Town of 500

**A**N interesting question was raised by the reader who recently asked us to analyze for him the possibilities of a garage and maintenance establishment in a town of 500 population near a large city. Substantially the problem of the reader, who was contemplating purchasing this garage, was as follows:

*Would the nearness to the large city be a drawback?*

*What would be the approximate volume of business that might be expected from the cars in the immediate community, not counting on transient cars?*

*What in a general way are the possibilities for the development of a profitable automotive business in this location, servicing all makes of cars?*

This little town had no other garage or service station, but had one other filling station. There were between 175 and 225 cars in the town and immediate vicinity. The large city 12 miles away had a population of 160,000.

We published this problem in the Sept. 18 issue of MOTOR AGE and requested our readers, from their experience, to help analyze it.

In next week's MOTOR AGE the possibilities of this business, as some of our readers see them, will be thoroughly analyzed. It makes intensely interesting reading.

## Trade Tapers Off Slightly in Chicago's Retail District

### September Starts Off Stronger Than it Finishes. Closed Car Demand Ratio Runs High

CHICAGO, Oct. 4.—There was a tapering off of retail sales in the Chicago district in September, considering the trade as a whole, notwithstanding instances of improved business reported by some of the dealers. The average of conditions described a slightly downward curve as compared with the preceding month, with the most pronounced drop being registered in the last two weeks. The month began somewhat better than it finished.

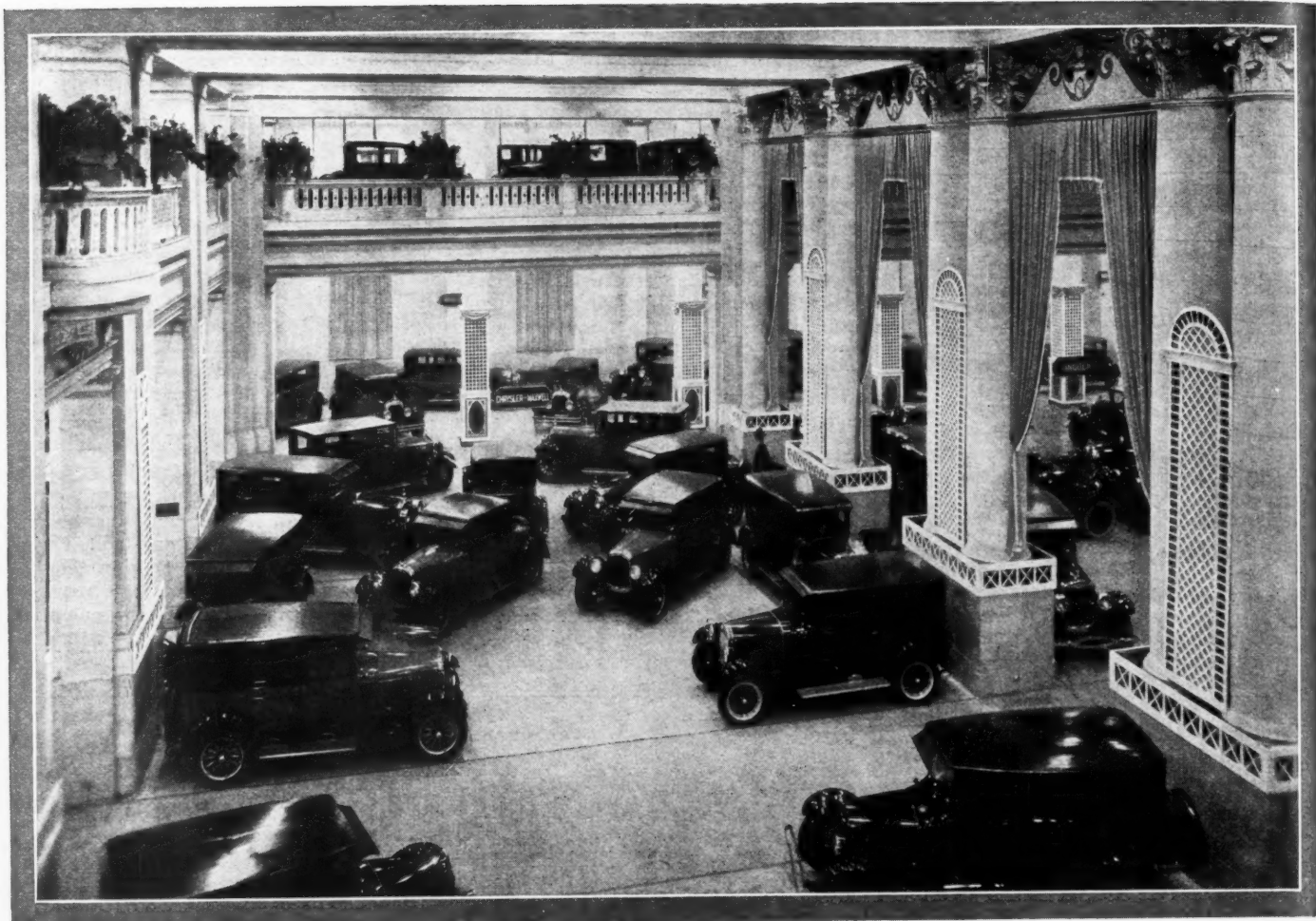
The proportionate volume of closed car sales compared with sales of open models is high, one of the larger dealers reporting that his closed car business

lately has run 100 per cent, the company having substantially no call for open models and at the time of this writing having none in stock. In other cases it is found that the closed car demand runs roundly from 60 per cent to 80 or 90, with more near these top figures than around the minimum of the range.

Stocks of 1924 models have ceased to be a problem in the local field while retail takings of 1925 stocks, generally speaking, are small, due to slack demand. Used car stocks possibly are smaller than at this time last year, the downtown trade being in better circumstances in this respect than dealers in the outlying sections.

There is a fairly free movement of the better grades of second-hand machines. Many of the local dealers speak optimistically of the prospects for last-quarter business but there are few who expect broken records while the majority will be satisfied if the next three months yield normal sales.





*A section of the New York Closed Car Show*

## *Satin Finishes on Bodies Popular At New York Closed Car Show*

*Severity of Plain Hood Lines Relieved by Embossed Molding. Green and Gray Colors Extensively Used. One-Piece Windshield Much in Evidence. New Designs of Interior Hardware Shown*

ONE of the outstanding features of the enclosed car show held in New York last week was the great number of cars in the comparatively dull satin finishes of the pyroxylin type. There was every evidence that these finishes are well liked. A large number of exhibits had at least one car with pyroxylin finish while some makers used this finish exclusively. It is apparent that the car owner is beginning to appreciate the advantage from a service standpoint of a finish that is hard to scratch and easily cleaned. In any case such a finish is certain to have an extensive trial for it is used in all price classes and by both large and small producers.

Studebaker had one model in this finish, Buick showed more than one, Hupmobile several. Moon used a nitro-cellulose finish exclusively while other makers who showed at least one model

so finished include Jewett, Chandler, Marmon, Case, Franklin and others. Oakland used it for the second year.

From this it should not be concluded that glossy finishes were not in evidence. They probably outnumbered the dull or satin finish cars and a number of makes still employ glossy varnish exclusively for standard work but some furnish nitro-cellulose finish jobs on special order.

### *Colors Are Changing*

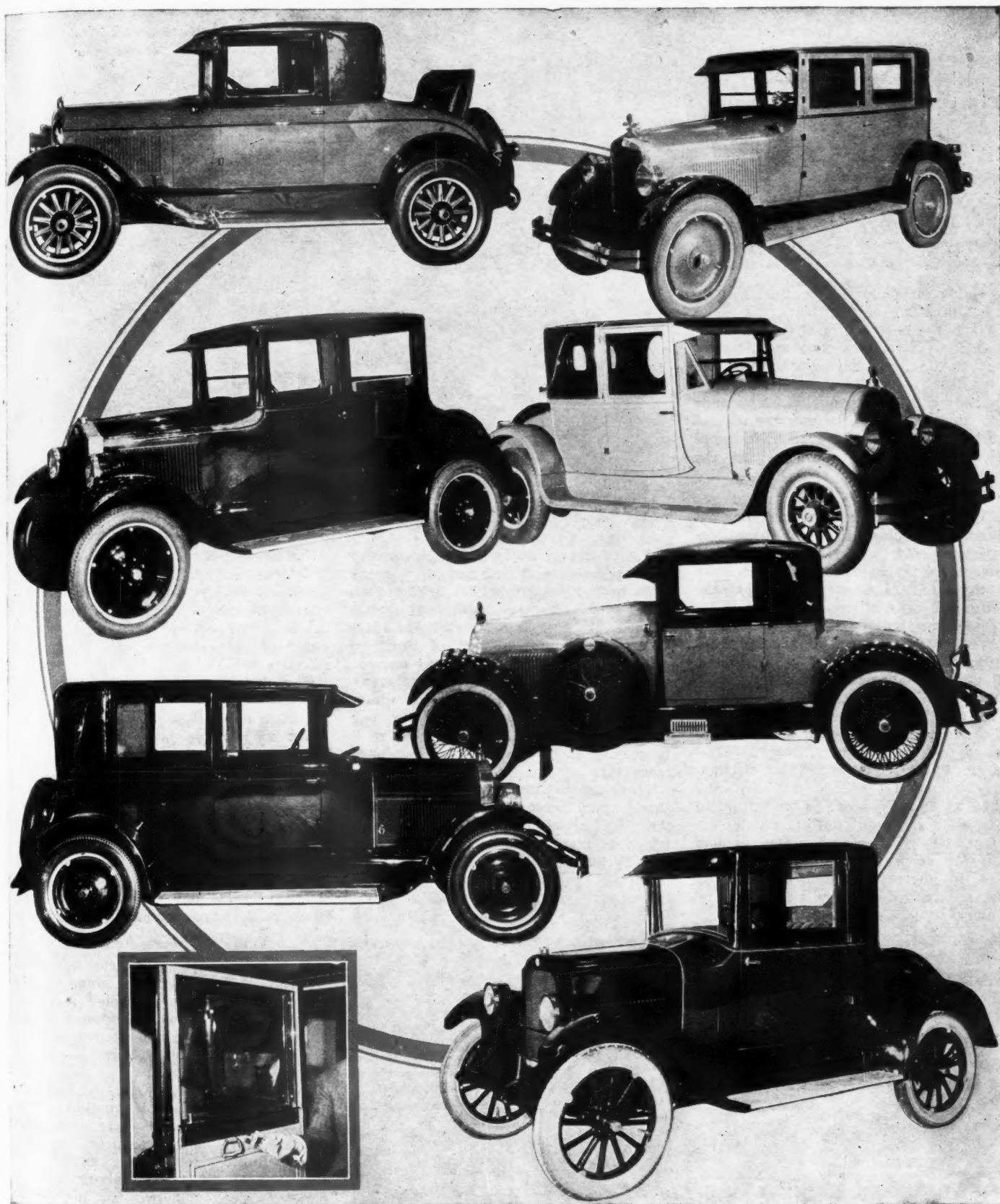
Colors also are changing. There were more greens and grays than for the last two years, while maroon was much less in evidence. There are still a great many blues, but they ran more to the Copenhagen and marine shades than last year. Black cars were much less prominent than in past years although they were shown by several of the large manufacturers, especially on the large

production models. On the other hand there were a minimum of the very bright and showy colors.

Superstructures finished in black were dominant as always, but a few makers achieved a degree of individuality by painting the superstructure in some color or shade which harmonizes with the body or affords a contrast which is pleasing. In some cases disk wheels, which were more in evidence than ever, are finished to match the body or to match the superstructure while occasionally they were painted in a pleasing contrast to other parts. Wood wheels were used on a great many models and of these a number had the natural wood finish. One Lexington model was shown with Smith cast metal wheels.

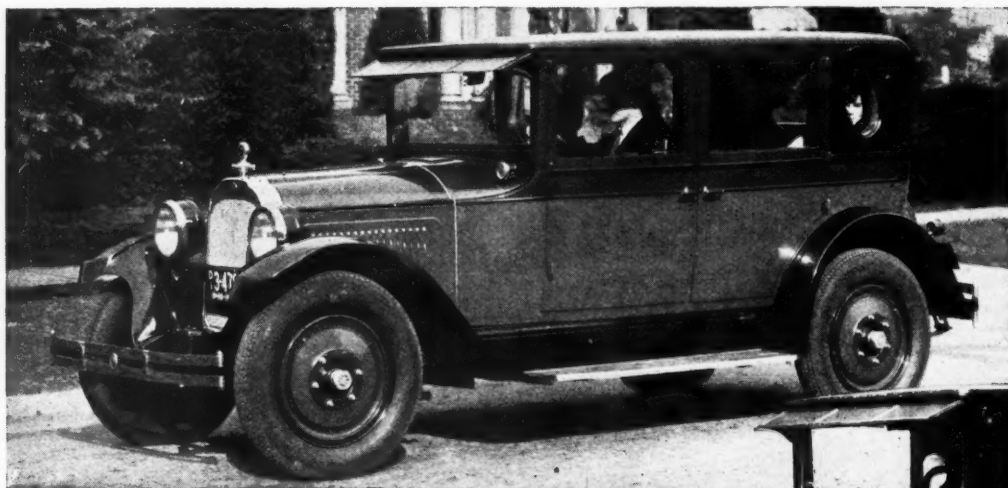
Several makers, among them Jordan, Stearns, Chrysler, Cadillac, Pierce-Arrow and Cleveland, had taken some steps to relieve the severity of a plain hood by

# These Attracted Buyers' Eyes in New York



At the left, from top to bottom, are the new Chrysler coupe with rumble seat; the Gray three-passenger coupe; the Flint coach, 40 hp., and the window-lifting device on the Flint. At the top, right, is the Jewett brougham and below the Marmon gray sport coupe; the Kissel sport coupe and the Star coupe





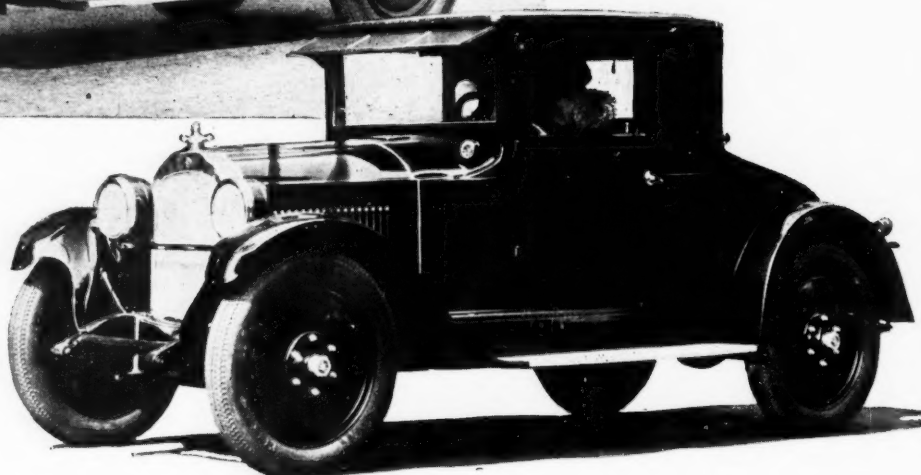
*Willys-Knight brougham and business coupe, "first-timers" at the show*

providing an embossed molding, usually a continuation of the belt line, or a break in the hood contour. On a number of bodies there were two moldings at the belt line, one adjacent to the windows usually running completely around the body and a lower one which extends from the radiator to the extreme rear of the body, where, in some cases, it slopes downward and disappears behind the fender.

#### *Some Color Touches*

The pleasing effect produced by even a small amount of color on the superstructure was well illustrated by a Hudson and an Essex coach which were in the standard colors except for the addition of gray or cream color on moldings and around the windows and hood louvres. These touches of color were outlined with a red hair line stripe and set off the bodies in such a way as to give them a quite distinctive appearance.

Another body feature which has taken hold and is being used by a number of makes, including Marmon, Buick, Willys-Knight, Paige, Kissel and others, particularly on special sedans, but in some cases also on coupes, is an elliptical window in the rear quarter, usually accompanied by a nickel plated landau iron for decoration. These irons are used in increasing numbers also on leather trimmed quarters which have no windows.



Visors are becoming more decorative and are being designed more in keeping with body lines. Now they seldom look as if they were an afterthought tacked on after the body is completed. As heretofore, they form a part of the roof structure in some cases. In the case of the Star coupe, the visor acts also as a sort of air scoop, collecting air which is forced inside the body of the car above the windshield, which in this case is permanently fixed and of the one-piece type.

There were more one-piece windshields than heretofore. These included the "V-V" type operated by a regulator, which is fitted on a number of bodies built by Fisher.

Among the other features calculated to improve ventilating conditions mention should be made of the Hubbard

Ventilating Eaves used by Apperson. These fittings are glass strips set at an angle at the top of the door window openings. They permit of opening the glass of the window part way without entry of rain and are said to provide effective ventilation.

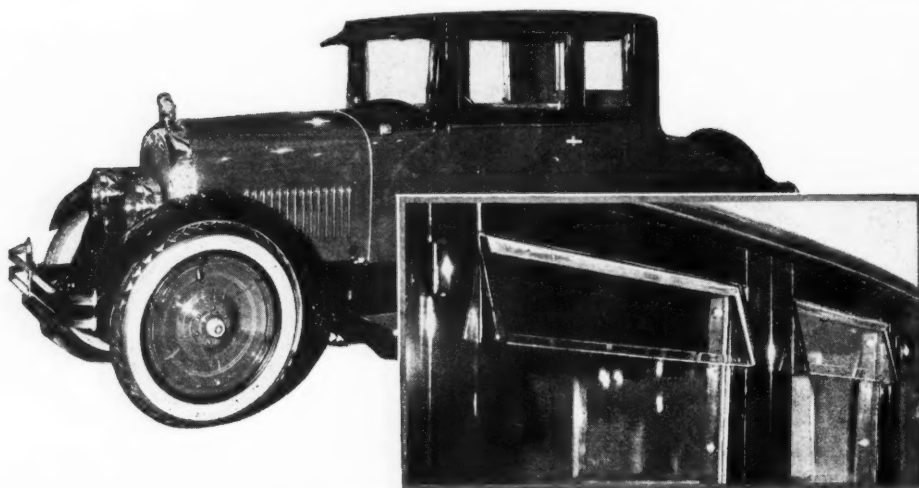
Nickel plated radiators, lamps and other fittings were as much or more in evidence as ever. Special, de luxe or sport models are given prominence in nearly all exhibits and attracted the bulk of attention. Most of these have a trunk or a rack at the rear on which to carry a trunk and have the necessary guard bars and rails to retain it and prevent it from rubbing the body.

Studebaker cars were equipped with molded rubber pads which cover the entire run boards and take the place of the linoleum covering ordinarily used.

#### *New Hardware Features*

Some new designs of interior hardware were noticed. Flint had some bodies with fittings partly enameled and employed are the Rawlings window regulators, in which the glass is raised by a rollers pring when the brake rod is turned.

Chrysler, Rollin and Overland had new coupes which attracted attention. The first mentioned has a single cross seat inside with a dickey seat in the rear deck. Rollin's job is characterized by high body sides and a narrow colored panel between the two belt moldings, giving the effect of a rather low top. The Overland business coupe has an exceptionally wide door, leaving a quarter panel only some six or eight inches wide, hence no quarter windows are needed and yet there is clear vision to the sides.



*The Apperson coupe offers new ventilators*



# The Motor Vehicle a Friend of Safety

*Organized Industry and Owners Join Safety Council in Effort to Reduce Accidents Due to Careless and Reckless Driving*

By SAM SHELTON

SOME day the story will be written of what the automobile has done for the safety movement in America. It is only being talked about now indirectly, vaguely as persons talk when ideas are not well formed in their minds and causes and effects not fully understood. Where talk is about safety it is also about the automobile. Time and again it reverted to the motor vehicle in the public and private discussions of the Thirteenth Annual Congress of the National Safety Council at Louisville, Ky., last week.

Not that the automobile was openly given credit for what it has done in the promotion of public safety. Minds are not yet thinking on so straight a line. But—the span of human life is increasing. Dangerous diseases are being conquered. The automobile is a necessity to the physician. Prompt medical and surgical care saves many a life. Good roads and motor buses are making possible good schools in the rural districts and banishing ignorance. People are living more in the country and driving to their work in the cities. Better health and greater happiness result.

## Support of Industry

These are some of the thoughts given expression in an unconnected manner by those who talk about the automobile and at the same time talk about safety. It is usually their intention to talk about the dangerous side of the motor vehicle, but it is interesting that almost unconsciously they catalog the achievements that some day will be bright spots on the record of the progress of safety.

And yet it is lamentably true that the motor vehicle has been so often misused as an instrument of injury to persons and property that the members of the safety councils whose business it is to promote safety in the factory, on the streets, in the home, school, office and elsewhere, find it advisable as they did at Louisville to make it a major subject of their discussions. They are confronted with the facts that in the more or less spectacular manner the motor vehicle in every city in the country and on rural highways kills and maims human beings. The safety councils which are members of the great National Safety Council are devoting their efforts toward the prevention of motor vehicle accidents just as they are toward the prevention of accidents in the foundry, in the machine shop, on the bathing beach or wherever else people engage in labor or recreation that carries with it a hazard.

It is fortunate that in the promotion of safety in the use of motor vehicles the safety councils have with them the

whole-hearted support of the automotive industry and of the great body of organized motorists. This made it possible for the Safety Congress to draw upon the industry and the motorists' organizations for capable speakers to discuss the practical problems of making streets and highways safe.

The automotive industry has a distinct interest in such safety discussions as that which took place at this safety congress. The industry's interest has both a public and a private aspect. In the first place the manufacturers of motor vehicles want their products to give dependable and satisfactory service. Good business alone dictates that automobiles and motor trucks be made as safe as they can possibly be made so that the public will not fear to buy and drive them.

The manufacturers naturally have an interest in all the measures and devices by which motor vehicle transportation has been made safer or by which it is hoped to still further reduce the hazards of the road. At the same time the motor vehicle manufacturer has a safety problem within its own factory that is no more his individually than it is that of the stove manufacturer, or the street car manufacturer or the button maker. It is the problem of men and machines.

The introduction of power machines speeded up production in industry and thus reduced the cost. But men and women are necessary to operate the machines and human beings are subject to accidents. Accidents result, and injuries to employees mean the loss of time and money when they do not cause loss of life.

How to reduce to the minimum or eliminate such accidents is the very serious study of the automotive manufacturer for by so doing the motor vehicle can be produced at less cost and better. To that end there is a special automotive section of the National Safety Council and its sessions this year were better attended and of more widespread interest than in any year before.

## The Human Element

It is significant that in this meeting there was no talk about inherent weaknesses in the motor vehicles themselves that might cause fatal accidents. It apparently is fully realized that the motor vehicle as built today is a safe machine, that the strength and reliability built into it by the manufacturer are sufficient for all that may be required of it, and that if only rightly used it cannot be a source of danger.

There was talk about the human element, about the car driver and the pedes-

trian, about causes of accidents and how they may be avoided. Charles F. Kettering, vice-president of General Motors Research Corp., who was one of the speakers, believes any remedy for accidents which presupposes intelligence is doomed to failure. He believes the general intellectual level is very low and that thinking is something which the majority of people refuse to do. He believes any safety measure to be at all successful must appeal very forcibly to the instinct for self-preservation. He would remove all "danger" and similar signs from factories and shops. He says they are allowed to grow yellow with age and nobody pays any attention to them unless it is to be moved by the suggestion of danger into the very fact itself.

He did not say anything about it and probably he had not seen it, but there was exhibited in one of the halls a metal sign manufactured by one of the companies making a business of such things which read, "Dodge Danger Daily." What a pleasing and happy reminder to place before the worker, or the pedestrian or the motorist every morning! One can well understand how the nerves of a factory worker who was forced to view such an atrocious suggestion every day might become weakened to the point of leading him directly into the path of danger.

## None of the Credit

A vehicle that is inherently safe has become the immediate cause of enough fatal accidents on streets and highways to call down upon it a great share of the attention of this great safety congress. The president, L. A. DeBlois, in his opening address reviewed the progress of safety since the organization of the safety council thirteen years ago. The number of accidental deaths per 100,000 declined from 85 in 1913 to 68 in 1921. He said there was a slight increase in 1922 and 1923 which was "due to increasing automobile fatalities."

Thus the automobile took its share of blame for things as they are now but got none of the credit. The accidental death rate is still far below what it was in 1913 and Mr. DeBlois in his address says, "We are told by actuaries that the span of life is increasing." Perhaps the automobile has helped to increase the life span. Fresh air may have something to do with it. Or milk that is transported quickly and safely by truck from the farm to city user. Or the doctor's car that quickly carries skill and medicine to the emergency. Or the motor ambulance that speeds the urgent case to the hospital. Deaths there are, of course, attributable to the abuse of the automobile, but if we only knew all the facts would

not there be many lives saved to glorify the credit side!

A sincere and earnest purpose to make the use of automobiles in city and country as safe as is humanely possible was exhibited by various speakers. Mental tests for drivers, licensing of drivers and revocation of licenses, impounding of cars, uniform traffic codes, uniform speed laws—these were some of the topics touched upon by speakers.

Speaking for the National Automobile Chamber of Commerce, George H. Pride of Ardmore, Pa., a member of the N. A. C. C. Committee on Traffic Planning and Safety, urged the importance of knowing the cause of traffic accidents in order to prevent them. He told of the effort of his committee to ascertain causes through reports which a large number of newspapers have agreed to make as to the cause of every accident in their respective cities. He declared that the automotive industry is squarely behind every legitimate and earnest effort to make safer the use of automobiles. He

urged no mercy for the intoxicated driver and the impounding of the car of the driver who is duly convicted of reckless driving. The safety council delegates vigorously applauded this program.

### Uniform Laws Urged

Ernest N. Smith, general manager of the American Automobile Association, especially urged the enactment of uniform traffic codes and speed laws. He cited instances of accidents occurring to drivers in strange cities because they followed practices which were required in their home cities. He was thinking especially of the thousands of motor tourists who wander far from home every season.

A proposal of prime importance that he urged for general adoption was the putting of responsibility for safety into the hands of safety engineers. By safety engineers he means scientific men with the qualifications and authority to study and devise workable traffic systems.

Mental tests for drivers before issuance

of license are not practicable at this time, according to Dr. Arnold L. Jacoby of Detroit, who as director of the psychopathic clinic of his home city has examined many drivers who have figured in accidents. He finds that a suitable psychiatric test for the elimination of those mentally unfit to operate automobiles would consume about an hour in its application to each individual. He frankly declares that is too long and the only hope he sees for such tests is that a group test might be devised that could be applied to a fairly large group in about 40 minutes.

Dr. Jacoby finds it easy enough to measure the quantitative mentality of the driver so as to determine whether or not he has the mental capacity to be a good driver, but he finds it more difficult to measure the qualitative capacity.

Qualitative capacity depends upon mental attitude, and he has found in most reckless drivers an egotistic attitude that causes them to think only of themselves, disregarding the rights of others.

## How to Figure Mark-Up for Profit

(Continued from page 11)

hand column and adding the credit to the cost he will have the correct selling price.

Thus in finding the correct selling price for an article costing \$1.20 where the gross profit percentage is 20 per cent, the merchant finds the figure "20 per cent" in the left-hand column of the table. The figure directly opposite is 25 per cent. The cost of the article is \$1.20:

\$1.20	Cost
.25	% mark-up
600	
240	
\$ .30	margin
1.20	cost
\$1.50	selling price

The items which make up the gross profit of a business are these:

- Rent (or 6 per cent interest on value of property if owned by you)
- Taxes
- Interest on your investment at 6 per cent—
- Capital invested in merchandise
- Furniture and fixtures
- Delivery equipment
- Repairs
- Salaries (including your own)
- Breakage
- Stationery, bags, paper and twine
- Advertising, telephone, bad accounts
- Depreciation of building if owned by you, fixtures, etc.
- Ice, heat, light
- Donations
- Painting, insurance
- Collection costs
- Net profit.

These items have all got to be covered

## 25 Years Ago In the Automobile Industry As Recorded In MOTOR AGE

(From MOTOR AGE of Oct. 10, 1899)

### Doctor Wins Race

A page and a half are devoted to an account of a race held at Galesburg, Ill., Oct. 4, 1899, between a Winton automobile owned by Dr. E. V. Morris of Galesburg, and a Duryea owned by F. D. Snow of Wyoming, Ill. The Duryea vehicle was three years old and the Winton was a new car. The race was scheduled for 50 miles, but at the end of 15 miles the Duryea car became disabled and stopped, the race and a \$2,000 prize going to Dr. Morris by forfeiture. The winner made the 15 miles in 42 minutes and 18 seconds.

### Ascends Mount Hamilton

Dr. David Starr Jordan, president of Stanford University, describes a trip made in an Elliott gasoline automobile to the summit of Mount Hamilton, 4,120 ft. above the city of San Jose, Cal. The following is a quotation from an article by Dr. Jordan:

"We left San Jose at noon on Wednesday. Through the crowded streets Mr.

Elliott moved slowly and carefully, but along Santa Clara street, when not obstructed by teams, we were able to fly along at the rate of 12 to 18 miles an hour. On the heavy grades of Mount Hamilton we made about four miles an hour, and toward the top but three. The engine is sensitive to grade and dust, and on very heavy grade she kicks stoutly with her "hind legs."

### Electric Vehicle Meets With Mishap

Last week an automobile belonging to the Illinois Electric Vehicle Transportation Co. fell into the cellar opening in front of the company's stables at 173 Michigan avenue, Chicago, and there it stuck for several hours, for it weighed three tons and was wedged in such a way it took a good sized derrick to pull it out.

### Working on Motor Tandem

Charles E. Duryea of Peoria, Ill., is at work on a motor tandem to be used as a pacing machine. There will be no pedals, but a 6hp. 3-cylinder Duryea gas motor.

### BUICK AGENCY WARMS HOUSE

DALLAS, Tex., Oct. 6.—The new home of the Worsham-Buick Company of Dallas, Tex., was opened with a house warming. The company has 60,000 square feet of display space. The Dallas Buick house did more than \$1,000,000 worth of business in the past 12 months, President J. M. Worsham said. It expects to do \$1,500,000 next year. The new home is four stories high, covers half a block and was completed at a cost of more than a quarter million dollars. It is especially designed for displaying automobiles and is located in the business district.

by the rate of mark-up. They must every one of them be provided for if the business is to go on smoothly.

Suppose, for example, that your overhead expense amounts to 30 per cent and you desire to make a 20 per cent net profit on a certain article. Find 30 per cent in the column at the left of the table and 20 per cent in the horizontal line at the top. Where the two columns come together will be found the correct mark-up; in this case 100 per cent or double the cost.

MOTOR AGE is indebted to the National Cash Register Co.'s booklet, "Better Retailing," for much of the information contained in this article.



# Letters to the Editor

## Why Race Drivers Stick

Franklin, Pa.

To the Editor of MOTOR AGE:—

Quite often we have heard folks make the remark "What do the boys drive for when they have enough money, why do they take the chances?" Let us tell you first of all that the hazards of racing are the last thing a driver considers. No one can convince him that his vocation carries any greater element of chance than that of a hundred and one other methods of earning a livelihood.

Naturally, when racing an automobile is his sole source of income, a driver will drive his best and take chances to win the coveted place and its consequent prize—the better position in which he finishes the more money he will earn. And again, there is the honor and prestige and satisfaction of earning for himself the title of "National Champion". This goes to the driver having accumulated the greatest number of points at the several national events of the year.

But aside from this there is a bigger reward for every driver is an inventor, designer or manufacturer in the making. The race track is the laboratory of the automobile industry, and without racing the industry would not be in the stage of advancement it is today. Certain car and accessory manufacturers spend thousands of dollars a year on racing to gain the knowledge that will increase the efficiency of their commercial product. For instance, one oil company doing business only in the state of California has a representative who it sends to every big meet in the United States, and supplies gas and oil to the drivers free of cost. This company sent a carload of gas by express from Los Angeles to Altoona to meet an emergency.

Ethyl gas, four wheel brakes, disc wheel, various shock absorbers, the battery ignition with distributor head, light weight pistons, counterbalanced crank shaft, the composition and treatment of various metals, and countless other features of the present day machine saw their birth and development on the race courses of the country.

Racing drivers are responsible for many of these, and primarily it is the student of mechanics who makes the truly great driver. Rickenbacker, Harroun, De Palma, Ruckstall, Chevrolet and Durant are just a few of the better known. Jos. Boyer at the time of his death was under contract to conduct experiments the following week for one of the largest spark plug manufacturers. Jimmy Murphy, worth over a quarter of a million dollars, which he had earned as a racing driver, had just completed a car with front wheel drive, the motor alone of which cost him \$16,000.00. Jimmy was to go after worlds records with this car upon his return to California, but came to his untimely end at Syracuse on September 15th. Murphy was not a dare devil driver, but one of the greatest students of mechanics in the country—he won his races not so much because he outdrove his opponents, but due to the fact that his cars were always in the best possible mechanical condition to stand the strain of the heartbreaking grinds.

There is a glamor and fascination to automobile racing that once tasted, seems to get into the blood. Once a driver of a racing car it seems that the possession on accumulation of wealth becomes secondary to the thrill of competition. W. K. Vanderbilt, David Bruce-Brown, Dario Resta, Joe Boyer and many others rated as millionaires have graced the ranks solely for the sport of the game.

And this applies to the racing fan too for the biggest sporting crowd of the year is gathered at Indianapolis on Decoration Day. This year it numbered 142,000 people—a greater attendance than any baseball, football, horse racing or fight

crowd that has ever been gathered for a single event in the United States. Automobile racing has truly won its place as one of the most popular of sports.

Contest Board, A. A. A.

## License Plates Stay With Car in Wisconsin

DEPARTMENT OF STATE  
Madison, Wisconsin

To the Editor of MOTOR AGE:

In the September 11th issue of MOTOR AGE under the heading "The Readers' Clearing House" I note that one of your writers replies to an inquiry from a Wisconsin subscriber regarding the transfer of license plates. Your writer in this instance gives the subscriber incorrect information, evidently based on knowledge of the motor vehicle license law in effect in Wisconsin prior to January 1, 1924.

For your information I am enclosing a digest of Wisconsin motor vehicle laws, issued by the Secretary of State, and you will find on page 8 that under our present statutes motor vehicle license plates can be used only upon the vehicle to which they are originally issued, and that in case of sale the license plates must remain on the vehicle and be transferred from the seller to the buyer, the latter paying a fee of \$1. This procedure applies regardless of the number of times an identical vehicle changes ownership during the current year.

For the correct information of such of your Wisconsin subscribers who may not be familiar with the above provision of our law, I respectfully suggest that you publish this letter or similar information.

Very truly yours,

HOMER G. BELL,  
Inspector, Department of State.

## Suggests Study of MOTOR AGE

East Rochester, N. Y.

To the Editor of MOTOR AGE:

Enclosed please find check for my subscription. I have mislaid the blank which you enclosed but will say that I am running a garage and paint shop. Also deal some in used cars.

You have asked for a letter with helpful hints to readers to MOTOR AGE. At present I can think of nothing of my own, but will say that I started in the painting of automobiles for myself some four years ago and intended to cater to that and washing cars only. But having had a great deal of experience and my friends knowing of it, I have had small repairs to make on cars until it became necessary for me to hire a mechanic to help me. Up until the past year I knew practically nothing of ignition but did know something about bearing work and painting, in as much as my father was a carriage maker and a first class painter. He was foreman of the Cunningham company's shop previous to going in business for himself.

But what I want to say is that if everyone who subscribes to MOTOR AGE will give it the same amount of time that I do, they cannot help bettering themselves. I am able to put up an argument with anyone around here and at the present time have helped some old ignition men in some numerous ways that they thought I knew nothing about. Thanks to MOTOR AGE.

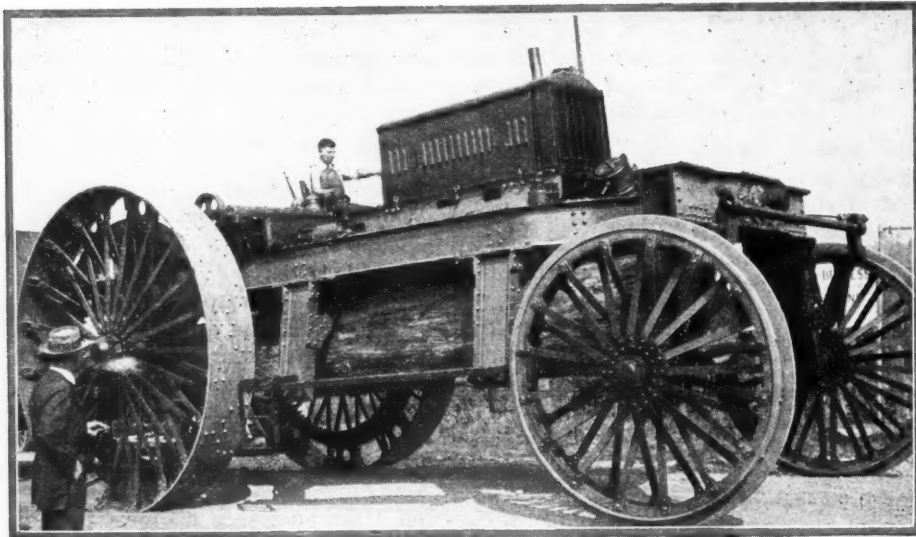
Believe me, I am a grateful reader.

Very truly yours,

ARTHUR D. FLAGGER.



# MOTOR AGE'S PICTURE PAGES

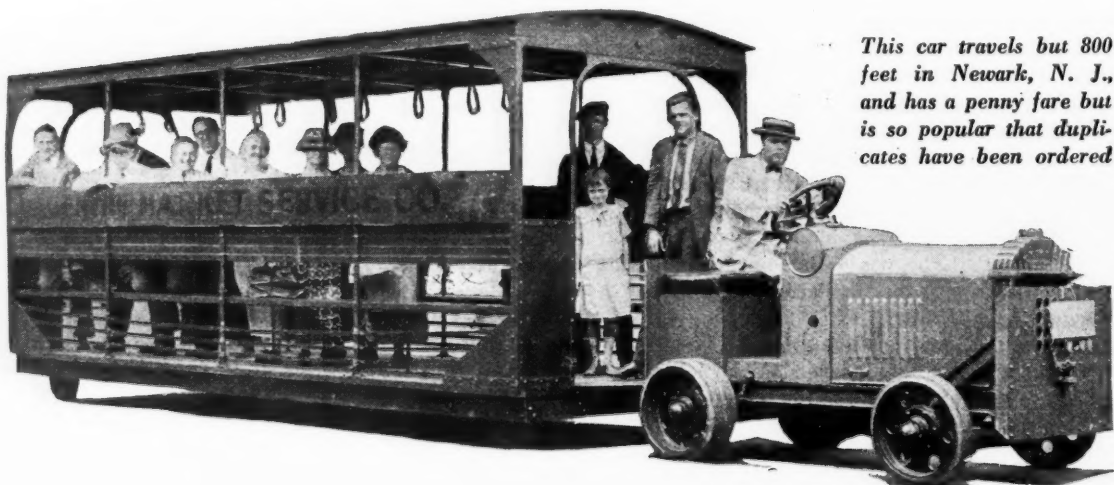


This tractor was built by the Pacific Car & Foundry Co. of Seattle, Wash., for a California logging outfit. It is so large that a Ford car can run under it and is said to be the biggest in the world



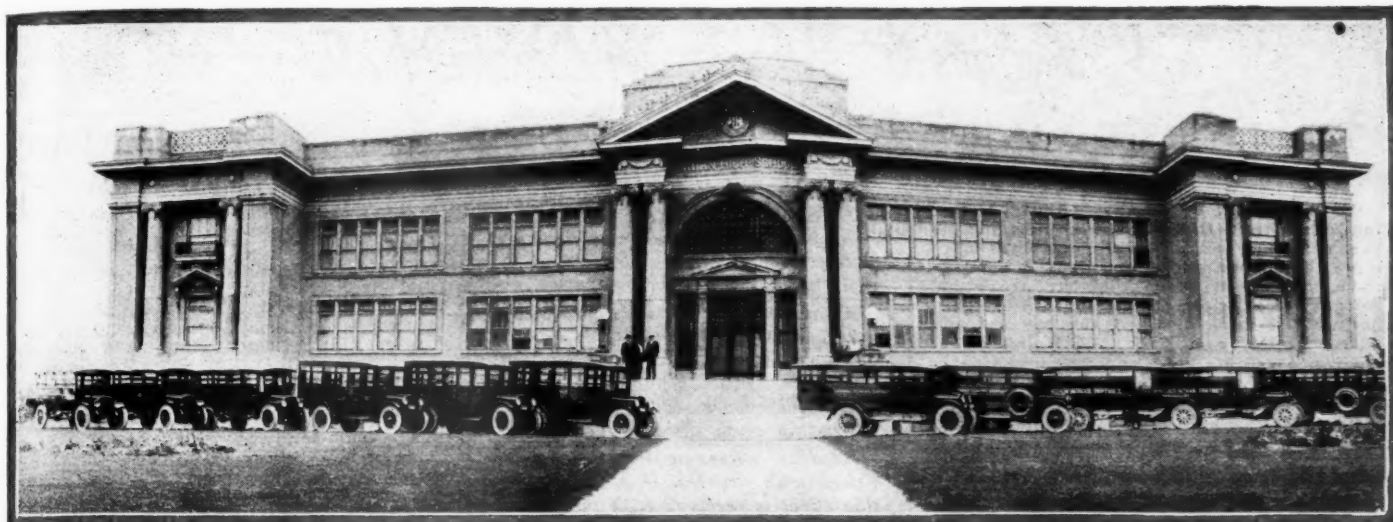
William Gruner, Buick enthusiast of Chicago, recently piloted this car to Milwaukee with the gears locked in high, making the first half of the journey at a three and a half mile an hour gait and the balance at 20 miles per hour

The Milwaukee Electric Railway and Light Co. operating street car systems in southern Wisconsin has equipped this car with a pretty vivid example of someone who is probably now making wishes about what he could have done to avoid the accident which resulted in this smash



This car travels but 800 feet in Newark, N. J., and has a penny fare but is so popular that duplicates have been ordered

# OF AUTOMOTIVE INTEREST



*Out in Utah where distances are figured in long, long miles and schools are hard to reach, the Jordan High School has put into use this fleet of Republic school busses which enable students to reach classes with no difficulty*



*The world's largest pneumatic tire, 64 by 14 is shown here. It was designed by the Goodrich Company to sustain a load of 20,000 pounds at an inflated pressure of 75 pounds*



*A polycon boy in the Near East town of Alexandropol cranking the home made automobile—maybe the Henry Ford of Hindustan or something—who knows?*

*Mrs La Verne Wright of Port Oxford, Ore., is the steady driver of this Mack logging truck and is by no means an amateur*





# The READERS' CLEARING HOUSE

## Questions & Answers on Dealers' Problems

### Tune It Up and Add 10 Miles

Q.—We have a Nash 6-cylinder touring car about three months old, which has run 3,000 miles. This car does not have the power and speed that it should have. The best speed that we are able to get from this car is 50 miles per hour. We have checked the spark and valve timing and find it O.K. Tappet clearance is .010 and carburetor adjustment is O.K. How fast can these cars go?—Cleveland Subscriber.

Some of the cars were put out with a rear axle gear ratio of 55 to 11, while others had a ratio of 48 or 46 to 11. If the high ratio is used as was the case especially in the closed model, it may account for the condition you describe. It would not account for lack of power, however, but only for reduction in maximum speed available. You can check the gear ratio by jacking up one rear wheel and putting the transmission in high. Then turn the engine over by hand until the rear wheel which is jacked up has made exactly two revolutions. The number of turns of the crank necessary is then the gear ratio. You say the spark timing is O. K. but it might be well to check this and see if you can advance the spark far enough to have the engine knock or labor. If not it is possible that the setting is too much retarded for it should be possible to advance the spark to the point where the engine does knock or labor. The best running point will then be with the lever slightly retarded from this point where knocking is experienced. Another possibility is that too much exhaust heat is being used at the intake manifold and it would bell to try this with the heat shut off from the manifold. The heat is needed at the start and until the engine is fairly warmed up, but an excessive amount of heat reduces the quantity of fuel which can be introduced into the cylinder. You mentioned checking the tappet clearance. You also claim that the clearance is .010 in. This value is correct if measured when the engine is hot. You might also check the car for friction by rolling it along a smooth pavement and comparing the effort necessary with the effort necessary to move a similar car. It is possible that the piston rings are sticking in the grooves, but this condition would be noticed by loss of compression and by uneven running at low speeds.

### HARD STEERING WITH PETRIFIED GREASE

Q.—We have a 1917 Hudson super-six which has the original paint on it and has only been driven 10,000 miles. It has recently had new pistons and pins and rings installed and is in too good a condition to sacrifice in trade. We would like to know if it could be equipped with ball or roller bearings at the front

### The Readers' Clearing House

*THIS department is conducted to assist dealers and maintenance station executives in the solution of their problems.*

*All questions are answered direct by letter, so the name and address should be given in full. This saves waiting for the answer to be published, which sometimes occurs several weeks late, depending upon the space available.*

*Readers' names will not be published with articles, if a request to this effect is received with the letter.*

*Inquiries not of general interest will be answered by personal letter only. Emergency questions will be replied to by letter or telegram.*

*Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been made and these are answered by reference to previous issues.*

*Addresses of business firms will not be published in this department but will be supplied by letter.*

*Technical questions answered by B. M. Ikert, P. L. Dumas and A. H. Packer; Legal, by Wellington Gustin; Paint, by G. King Franklin Architectural, by Tom Wilder; Tires, by a Practical Tire Man; General Business questions, by MOTOR AGE organization in conference.*

axle knuckles so as to improve the steering. It is necessary to screw down on the grease cups every 20 or 30 miles in order to keep it from steering hard. If the grease cups are continually screwed down it can be steered with one hand with pleasure. What change could be made to overcome this condition?—Wilson Rice, Muscatine, Iowa.

We do not believe it would be practicable to install ball or roller bearings. There is apparently, however, something wrong if you have to turn the grease cups down every 20 or 30 miles. We would suggest removing the steering king pins and cleaning them up. They are probably coated with old, hard, dirty grease which prevents new grease working into the bearing surfaces. The king pins should be cleaned up with fine emery cloth and you should also see that the passages are clear so that the grease can flow in. After this is done you will probably have no trouble, but if you do it would be a simple matter to install one of the pressure lubricating systems which use special connections and a high pressure grease gun. Many cars are on the market which use plain bearings in their steering spindles and they have no trouble such as you describe.

### Allowed Time on Two Overhaul Jobs

Q.—I would like to know as soon as possible the total number of hours it would take to do the following on a Dodge: Pull engine, disassemble, wash and clean, grind valves, scrape in all new main bearings, three new connecting rod bearings, put in oversize wrist pins, clean starter, fit in new rings and assemble motor or engine?—John A. Whitman, 526 Division street, Webster City, Iowa.

Forty-one hours.

Q.—The following work on a Maxwell, 1921 model, with six-volt electrical system. Clean carbon, grind valves, fit new wrist pins, fit new rings, clean generator, starter and starter switch, rewire generator to battery and high tension circuit, tighten connecting rods bearings, remove all wheels, clean bearings and grease, put on new speedometer swivel and locate trouble in old one. Remove rear end, disassemble pinion shaft housing, put in new felts and adjust gears. Adjust foot brakes, remove radiator and rivet steering gear to frame, assemble and wash chassis.

Thirty-four hours. If the speedometer on this model is driven from the transmission instead of one hour for the change of swivel joint it should be three hours. After locating the trouble in the old swivel joint it will be found that it is much cheaper to secure a new joint than to attempt to repair the other one as worn out gears or bearings, or broken gears generally represent the trouble to which it is subject. The time given here is for the two piece malleable type of rear axle.

### HARD STARTING DUE TO PLUGS?

Q.—We wish to refer to your issue of April 3rd, page 45, the article in regard to reason why a model K Hupmobile fails to start. This model has no vacuum tank and the trouble is neither in the ignition coil nor in the carburetor. It is in the spark plugs. For some reason you cannot use a spark plug having a large electrode. If you have even one in a set the car can be pulling 30 miles an hour on a hill and die in a hundred feet, forcing you to change gears even going into low. The only plug we have found to work and give all round satisfaction is a small electrode type which does not pre-ignite. However, if the car is hot it will not start. Grinding this engine probably brought the compression up to the point where a large electrode plug would pre-ignite, although with the car we had it happen before grinding, but the compression was about 60 pounds. We were a month finding the trouble, as plugs are the last thing one would suspect. We now get about 15½ miles to each gallon of gas at the present temperature in using the car around town.—Jules Greevy, Modern Auto Service Co., Omaha, Nebr.

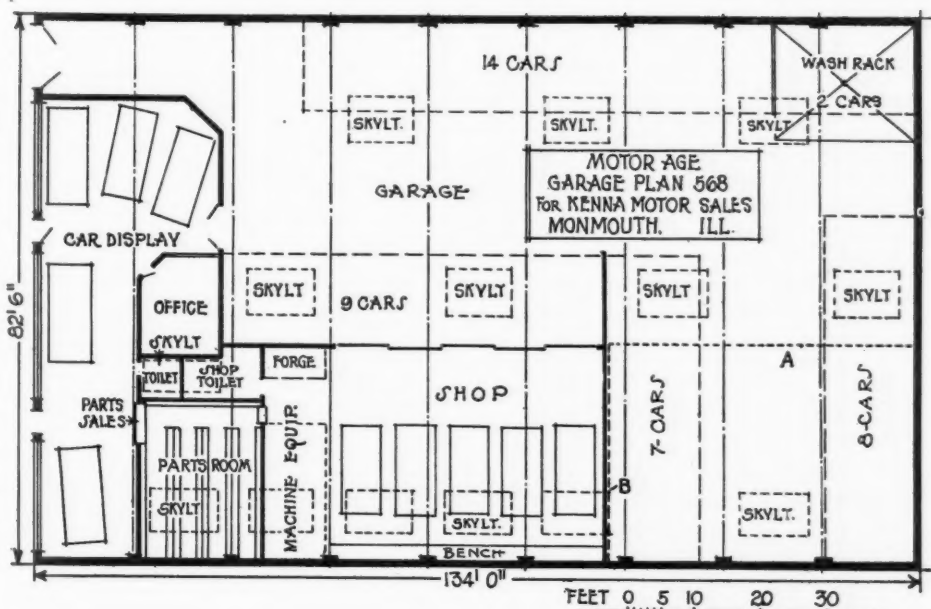
We are glad to submit this suggestion to our readers and would be pleased to hear from others having experiences along these lines.



## Desires Larger Than Space Allows

Q. We are planning a new building and wish, if possible, to have some suggestions from you. We have 82½ ft. east front, and 143 ft. deep. We wish one car entrance on the street side. Salesroom large enough to display 8 or 10 cars, with office in the salesroom. Stockroom back of salesroom and connected with office. In addition we wish to make room for storage and display of used automobiles. Storage space for approximately 50 cars, with a shop in the rear that we can work 4 or 5 mechanics. We wish a washrack for cars and two washrooms, one with ladies restroom, the other in the shop. We are thinking of a one story building with enough basement for a boiler room. We are enclosing a rough sketch of the building.—Kenna Motor Sales, 318 S. Main street, Monmouth, Ill.

We regret that your desires are rather larger than the space you have will permit. Instead of a garage space for fifty cars we have been obliged to stop at 38 and instead of a showroom for 8 or 10 cars we have arranged for 5. There is also no used car showroom. If, however, you would rather have a used car showroom at the expense of garage space we would suggest that a partition at A would give you space for about 2 rows of 5 cars each. We have placed the shop where it is instead of at the rear to make it handy to the stockroom and also to utilize the 35 ft. space left over from the garage, which should be 50 ft. wide. There are so many combinations in a



building of this size that it is hard to pick out the best one. Perhaps instead of the arrangement we show you could place your used car showroom at the front part of this space with the shop at the rear and the stockroom and toilet room between. This we believe would be really better than the one in the layout except that the stockroom would not be so convenient to retail customers. If

a partition is carried the whole length of the building there is another advantage and that is that the trusses can be made short and have their abutting end rest upon this partition or upon posts inserted in the partition. We have not shown the boiler room location, as this will depend somewhat on your local ordinances, as some cities require an outside entrance to a furnace room.

### Architectural Service

IN giving architectural advice, MOTOR AGE aims to assist its readers in their problems of planning, building and equipping, maintenance stations, garages, dealers' establishments, shops, filling stations, and in fact, any building necessary to automotive activity.

When making request for assistance, please see that we have all the data necessary to an intelligent handling of the job. Among other things, we need such information as follows:

Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

What departments are to be operated and how large it is expected to be.

Number of cars on sales floor.

Number of cars it is expected to garage.

Number of men employed in repair shop.

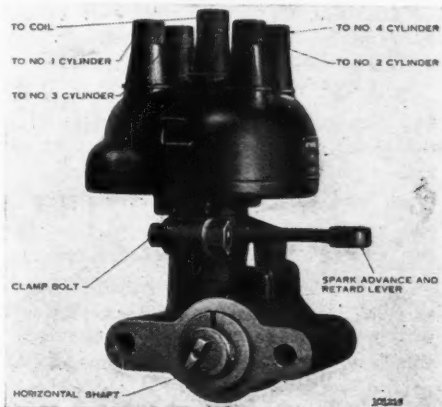
How much of an accessory department is anticipated.

## Everything Checked but Car Has No Pep

Q.—Tell me what makes a Maxwell boiler boil over while in high gear on a hill. This car is two years old and has disc wheels. All four wheels run freely and I am sure that there is no drag of any kind between the motor and rear end. I have checked the ignition and carburetor. The water circulation is O. K. Have put on new hose, top and bottom of radiator. The valves were ground three months ago. Fan is working properly. Have checked all wheels and find that they are all in line. In fact have done everything that I can think about except check the valve timing. Is it possible that the timing has slipped in some way? The car will not go over 35 m.p.h. on level and has no power in high gear on a hill. This car pumps a little oil when 5 quarts of oil are in the crankcase.—Maxwell Mechanic.

It is hardly likely that the valve timing has changed for the timing gears are keyed to their shafts and it is not likely that they would change their relative position. The timing can be checked, however, by seeing when the exhaust valve in any cylinder closes. The closing point should be when the piston in that particular cylinder has come up to dead center position and has barely

started down again. It is possible, however, that the ignition timing has slipped and we are showing an illustration which should assist in understanding this possibility. The spark advance and retard lever is clamped to the ignition unit and in case the clamp bolt should come loose it would be possible for this lever to slip and allow the ignition to be too much retarded. With the advance lever in the retard position the interrupter



Maxwell ignition timing

contacts should just open when the piston has come up to top dead center and has barely started down, being approximately 3/64 in. down. According to the instruction book on Maxwell cars the interrupter contacts should open from .008 in. to .010 in. The operation of the ignition is satisfactory with the points closer than this, however, settings of .005 to .006 being commonly used. Change in the interrupter gap will change the timing, so it is well to set the interrupter gap before checking the timing. If no changes are made except in the interrupter point opening it will be found that a very small opening will retard the spark while a wide opening will advance the spark. As you mention a condition where the engine pumps oil, it is possible that the piston rings need replacing and that loss of compression is really responsible for the loss of power. It is also possible that the carburetor setting is set to give too lean a mixture.

### SPREAD SAFETY

Dealers can do much to aid in the various campaigns for safer driving—help in every move. Teach customers to drive better.

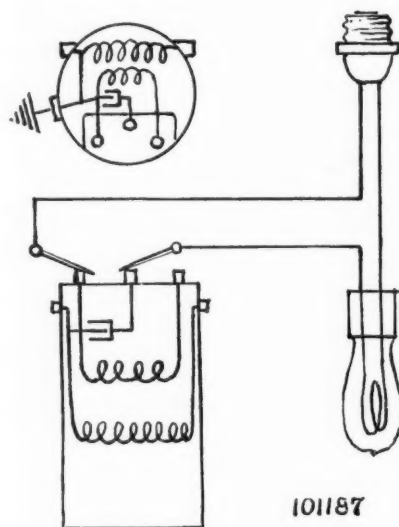
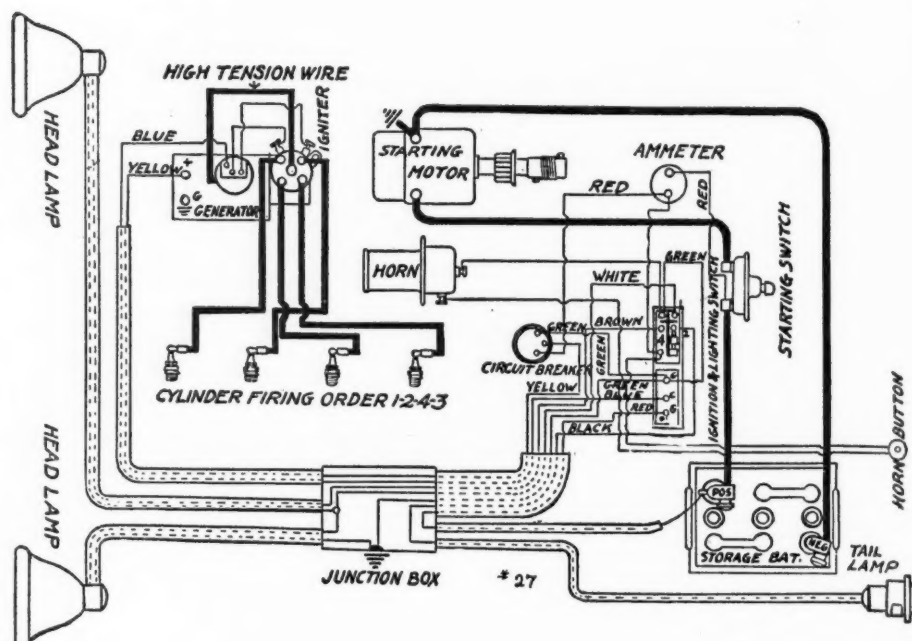
## A Tricky Rewiring Job

Q.—I am rewiring an old model Chevrolet, about 1916 I think, which has all the wires completely removed. The system is complete including storage battery, starting motor, generator, ammeter, ignition and lighting switch, horn and all lights and also has timer, distributor and coil, but I am having trouble in rewiring it properly. The ignition unit is an old model Connecticut and I would like to know how to test out the ignition coil so as to be able to connect it properly. How should this coil be tested to see whether the condenser is punctured or not, for the spark at the high tension terminal is very weak? I would also like to know how to wire up a combination ignition and lighting switch which is of the push button type. The ignition system has the automatic thermostat control in it for releasing the ignition button when left on.—Stuart Moore, Ashland, Wis.

We are showing a wiring diagram also two other illustrations which we have made up. One of these is a 110-volt test for shorted condensers while the other shows the internal circuits of the lighting switch in the bright and dim position. If you wish to, you can eliminate the cable from negative battery to the starting motor terminal and instead can put a cable on from negative battery to the frame of the car. One terminal of the starting motor, you will find, is grounded by the omission of insulating washers, so that this will act as a grounded return for the starting current from battery. From the positive battery terminal a heavy cable goes to the starter switch and from this terminal a small wire goes to the ammeter.

From the other ammeter terminal the wire goes to the lower terminal on the lighting switch as shown in this illustration. It also will be seen that a wire marked red goes to the bottom terminal of the ignition switch, this connection being made from positive battery. As corrosion sometimes interferes with connections of this sort, it might be well to leave this wire out and run another wire from the ammeter to the bottom terminal of the ignition switch. Another way to do this is to use a short wire so as to extend the wire which already goes from the ammeter to the lighting switch so as to make connection to the ignition switch. A careful study of the wiring diagram will show the connection needed. In the diagram all wires marked green are connected to ground, the ground in this case being in a junction box, although it can be any place on the frame of the car or engine.

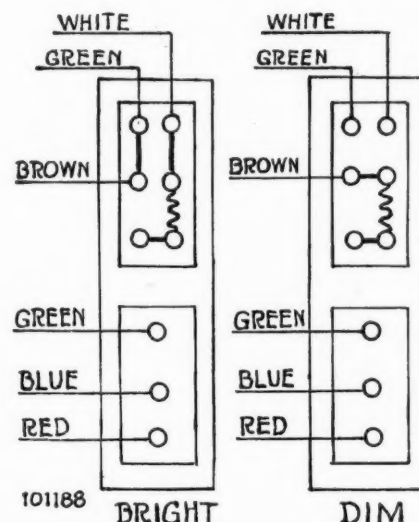
When the ignition switch button is operated it connects the red and blue terminals so that the battery current can flow out the wire marked blue to the coil. The current should then go through the primary winding of the coil and through the interrupter points and back to the coil terminal which is grounded. On these Connecticut coils you will possibly



110 VOLT TEST FOR SHORTED CONDENSER

find a brass strap at the side which is grounded by means of a clamp that holds the coil. You will also doubtless find that one of the secondary terminals is grounded in similar manner. Connecticut coils have at times been connected in different ways, so it is well to test out and make a diagram of the coil as shown in one of our illustrations.

With the 110-volt test indicated, a circuit through the secondary or fine winding should show up by a faint spark obtained when the test points are removed from one terminal. The resistance of the secondary winding is so high that the current through the lamp will not be enough to light up the filament. In testing across the primary winding which in our illustration is connected to the outer of the three terminals, will permit the lamp to light. A test can also be made here with a battery and ammeter and two or three wires if desired



CONNECTICUT IGNITION AND LIGHTING SWITCH

and it will be found that the ammeter reads six or seven amperes.

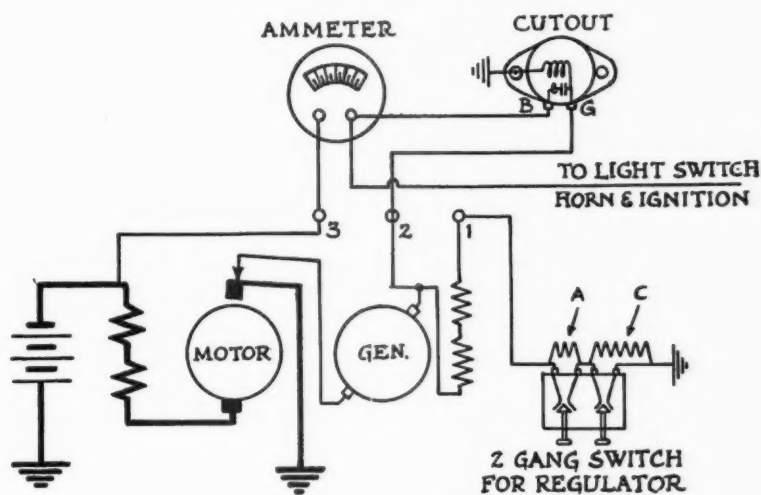
This current is reduced when the ignition switch is used due to the resistance in the thermostatic element. When the test points of the 110-volt lamp are put on the condenser terminals there will be no sign of current in the lamp if the condenser is O. K. However, should you test across a shorted condenser there will probably be enough current going through to light up the test lamp.

With the condenser in good shape the test points may be kept in contact with the terminals and at the same time slid along so that they touch each other. When this happens a snappy spark should occur which makes a noise like the crack of a small whip. This is the best test we know of for a good condenser. If the condenser appears to be shorted it is possible to replace it by

(Continued on next page.)



## 1914 Cadillac Wiring



WIRING OF 1914 CADILLAC WITH MERCURY  
REGULATOR DISCARDED

100737

Q.—I have been a reader of *MOTOR AGE* for years and appreciate the articles appearing in the Clearing House section. We try to keep a file of late copies but are unable to locate the article on elimination of the voltage regulator on the 1914 Cadillac. Kindly tell us all about it.—Auto Supply House, 401 Sonoma street, Vallejo, Cal.

In this illustration the starting motor circuits are the same as in the old system, the circuit being closed by dropping one of the starter brushes on the commutator which at the same time opens the generator circuit. The three small terminals on the motor generator which are numbered 1, 2, 3, are respectively field, live, generator brush and battery connection. If there is any question as to which one is the No. 3 terminal it can be determined by flashing a wire from the various terminals to the frame of the car. The battery, of course, should be connected as shown.

The terminal which flashes will be No. 3 terminal. After this has been connected to the ammeter a wire from the other ammeter terminal can be connected to the No. 1 and No. 2 terminal to determine which is which. When testing the No. 2 terminal current will go through the field winding and then through the armature to ground and this will be a comparatively small current.

In this way the terminals can be determined if the marks are not clear. At the back of the two-gang switch used as a regulator are two resistances, the one marked C being twice as long as the one marked A. When the car speed is such that the generator charges too much the switch A may be pulled out. At higher speeds C may be pulled out and at still higher speeds both A and C may be pulled out to give the lowest current available at high speed. Either iron or

nickel wire may be used in these resistance coils. The amount of and size of wire is best determined by experimenting, but as a guess we would say 5 ohms, using two-thirds of the total in one coil, one-third in the other.

Q.—What is the maximum horsepower of the 1914 Cadillac engine and supply curve showing the speed at maximum torque and brake horsepower and maximum r.p.m.?

We regret to state that the horsepower curve of this engine is not available and we would suggest that you communicate direct with the Cadillac factory at Detroit, if you desire same.

Q.—At what angle can we set this engine so as not to impair the lubrication?

The lubrication system is of the splash type using cast-in compartments in the oil pan. The angle at which the engine will operate satisfactory of course depends on the level of and disposition of the oil in the troughs. Offhand, we are of the opinion that eight degrees would be too great an angle to allow proper lubrication, but as a method of testing, we would suggest that you remove the oil pan assembly completely and then impose it at an angle of eight degrees and pour oil into it until the level in the rear troughs is at the standard height recommended by the Cadillac company.

Then note the level in the front troughs No. 1 and 2 and see whether by extending the scoops on the Nos. 1 and 2 rods it will enable you to get splash to them. If this is possible it will mean making longer scoops for the front rods and shortening the scoops on the rear rods, and at the same time it must be borne in mind that the oil level should be measured in the front troughs at the points where the scoops will strike it and not at the highest point.

## Jets on 1913 Buick

Q.—I am an ardent admirer of your magazine and read my copies from cover to cover. I have a few questions to ask you: Can the model 05 Zenith carburetor be used successfully on a 1913 Buick, 3 $\frac{1}{4}$  x 3 $\frac{1}{4}$  in. bore and stroke? The carburetor is now on the car, but does not work satisfactorily. I believe if the proper jets are installed it will work better even though it is made for a larger motor. At present it has a number 45 idling jet, 95 main jet and 120 compensator.—H. A. Wayne, care Chevrolet agency, Brecksville, Ohio.

The recommended internal specifications of the 05 carburetor for installation on the 1913 Buick are as follows: A No. 20 choke or venturi. This is a double cone shaped piece located in the throat of the carburetor above the jet. A No. 100 main jet, a No. 105 compensator and a No. 45 idling well.

Q.—Could this same carburetor be used on a Samson tractor model M? Engine has 4 in. bore by 5 $\frac{1}{2}$  in. stroke? If so, what are the proper jets, and could kerosene be used for fuel?

The recommended internal specifications for installation on the Samson tractor engine are a No. 22 venturi, No. 105 main jet and No. 115 compensator and No. 50 idling well. Carburetor is not recommended for kerosene as fuel.

## A TRICKY REWIRING JOB

(Continued from preceding page.)

removing the tin cover at the bottom of the coil. To do this file away the paint around the edges of the cover which will reveal two or three small pins. These pins hold the cover in place but may be driven into the compound in the coil.

The cover will then come off easily after which a new condenser may be installed. The two interrupter terminals must always be connected to the condenser, and the end of the primary winding which is not connected to the condenser must always be connected to the blue wire. Dimming the lights is accomplished by connecting them in series. The circuits shown in the large view of the lighting switch show how this is accomplished. In the bright position current goes through the fuse to the white wire which is the one branching at the junction box and going to each lamp.

The return through the left lamp is to be ground in the junction box, while through the right lamp it comes back to the brown wire where a connection in the switch completes the circuit to the green wire which is grounded. When the lights are turned to the dim position, current is carried first to the right head lamp and then to the junction box, then to the left head lamp and finally to ground. In this position on the lighting switch there is no connection made to the green wire. This will enable you to test out the switch with the 110-volt test to see if it makes the proper connections before you wire up. You should also check the ignition switch to see that it makes contact between the red and blue wire. Additional information will be furnished if needed.

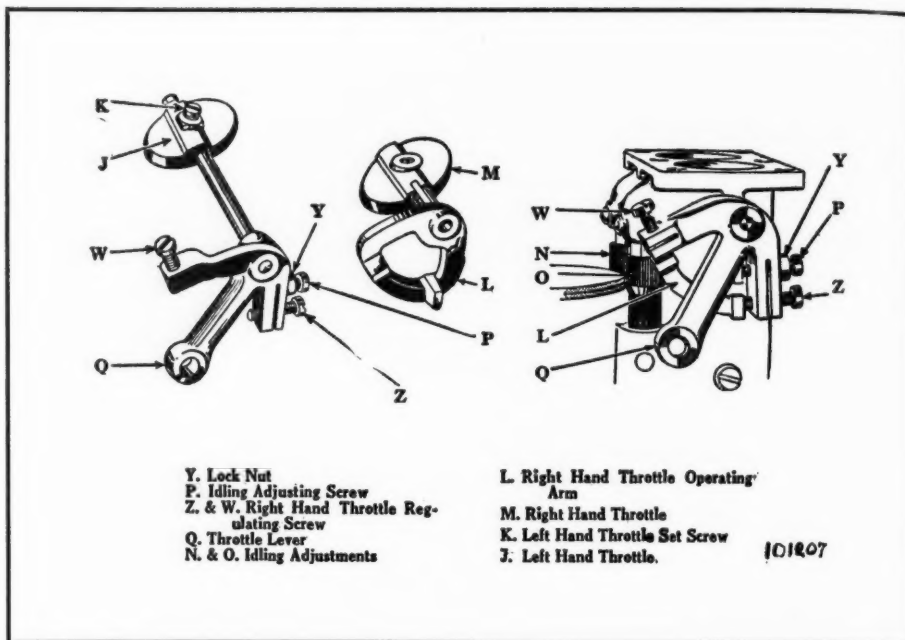
## On a Willys-Knight Eight

Q.—Please give me information in regard to an 8-cylinder Willys-Knight engine No. 545, model 88-8. It consumes entirely too much oil, about one gallon in every 40 miles. When idling it is enveloped in a fog of smoke. Gasoline consumption is also high, being about 4½ miles to the gallon. The power is good considering its low compression but the cylinders miss. They fire off and on, hit four or five times and then miss once or twice. This is the case on all eight cylinders. Is this caused by oil pumping? The coil and timer test out O. K. We have investigated the clearance of the pistons and find that they are loose about .021 in., this measurement having been made by using a feeler gage at the side of the piston. They appear to be aluminum and are standard size. Should we install cast iron pistons? Sleeves have very little perceptible shake. Advise how to proceed to stop oil pumping and increase the compression in this engine. What combination of rings would be best? The sleeves at the right hand engine have baffle plates while those at the left hand engine do not. Is this right? Is there any way to cut down the delivery of the oil pump?—Tennessee Subscriber.

With light weight alloy pistons the clearance should be about .008 in. Accordingly the clearance of .021 in. is far too great and it is a wonder that the engine runs at all. The recommended method of overhauling an engine of this type when the inner sleeve is worn excessively or is eccentric is to install new cylinder blocks and sleeves. If the value of the car does not make this advisable it would be well to use micrometers or a dial gage and check up the inside diameter of the inside sleeve to see if it is very much out of round. If not it will be possible to install new pistons which will have a clearance of about .008 in. It is possible to hone out the inside sleeve if care is used and new pistons may be lapped in if they are not too tight when the lapping process is started.

In general, it is considered advisable to follow the recommendations of the manufacturer of the car and we would accordingly recommend your getting in touch with the nearest Willys Knight service station and taking their recommendations on pistons. We understand that inner rings are now being used in the upper and lower ring groove so as to maintain ring contact with the cylinder wall and at the same time prevent pistons which have the proper clearance from slapping back and forth when cold.

Baffle plates should be used on the walls of the crankcase and on both of the inner sleeves. Accordingly as you find a baffle plate on one sleeve only it is obvious that at some time or other the other baffle plate has been removed and left off. There is no way of changing the amount of oil delivered by the pump, but this will be correct when you have a proper fit in the pistons and sleeves. After pistons and piston rings have been properly fitted and it is found that the spark is O. K. at each plug it may still be found that the engine operates unevenly if the two portions of the duplex carbureter are not properly adjusted.



This carbureter which has a single float chamber has two distinct mixing chambers and two throttle valves which control the mixture to the left and right-hand cylinder block. To see whether the two throttle valves are properly adjusted the motor should be well warmed up. Then disconnect the spark plug wires from the right-hand side of the motor and allow them to lie on the cylinder head. Adjust the butterfly throttle in the left-hand barrel of the carbureter which supplies the left-hand side of the motor. If the motor is idling too fast loosen or back off adjusting screw P until approximately the right speed has been secured. Next regulate the quality of mixture by turning knurled adjusting screw N. Turn it down or clockwise to make mixture leaner. Now hold screw P in position when locknut Y is firmly seated.

Determine the speed at which the motor is turning over by counting by the aid of a watch the number of sparks occurring in a short period of time between the end of one of the spark plug wires which was detached from a spark plug on the right-hand side of the motor and the cylinder block.

Then connect the spark plugs on the right-hand cylinders and disconnect those on the left. Back off screw Z and between this and screw W secure the proper amount of throttle opening, first to give an idling speed approximately the same as obtained on the other side of the motor and properly adjust the mixture by turning knurled screw O. Secure slower idling speed by loosening screw W and tightening screw Z, thus bringing throttle valve nearer closed.

## Taking Up Ford Crankshaft End Play

Q.—What are some of the proper methods in taking up crankshaft end play in a Ford motor when the magneto is so far away from the coils that it is hard to start? Also in case a person had no shop equipment and is isolated from any town where a good shop is available, how could this condition be taken care of? There are some adjustable center bearing caps advertised to overcome this and as we know of no one that has tried these we would like to know what results could be obtained and where such caps could be secured.

The standard method of taking up the end play is to install a new rear main bearing cap. This, of course, requires removal of the engine. A cap such as you require has been advertised recently in MOTOR AGE and we would suggest you referring to your copies of MOTOR AGE for the name and address of the manufacturer. We understand that these devices operate all right.

Q.—In installing oil groove piston rings, we have always reversed the top ring and put the oil groove on top, but some me-

chanics object to this, so I am asking you for your opinion.

It is our opinion that the oil groove type of ring is not essential in the top ring groove and that a plain ring is satisfactory at this point.

Q.—Is there any difference in the thickness of a piston ring at the top and bottom of the ring?—A Subscriber.

On the Ford rings there is a difference, the diameter being variable so that the sides of the ring are not parallel with the walls. It is possible to see this variation from a true cylindrical surface by holding two rings together and using a straight edge and then holding the rings up to the light with the straight edge held across the surface of the two rings. It is customary to use the top ring in such a way that the large diameter is up, so as to hold compression. The center and lower rings, however, are turned the other way with the scraping edge down so as to prevent excessive oil working up into the combustion chamber.



# BOOSTING ACCESSORY SALES

THE sale of accessories in the fall and winter months, should, if anything, be greater than during the summer. Concentrate on cold weather necessities now and prepare cars for the heavier running to come remembering that the longer they are kept on the road the longer will you profit.

The sale of honest merchandise that will give real service will assure you of a steady flow of business when others are complaining. Heaters, safety lights and many other cold weather necessities are the things that you should be pushing now. Each week on this page, we shall set forth the newer announcements of accessory manufacturers, all of which are as much necessities in the cold as in the warm weather.

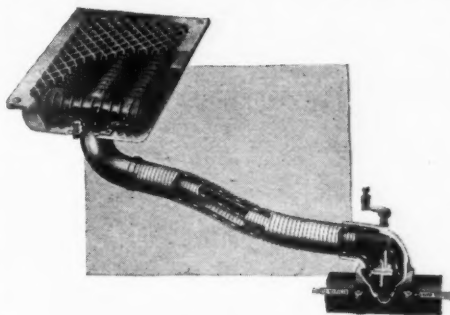
## Noble Heater

Announcement is made that the Noble heater, which for several years was made by the Noble Heater Co. of Fort Wayne, Ind., will henceforth be produced by the Gladiator Mfg. Co., Auburn, Ind., this company having taken over the rights both to manufacture and sell the heater. Plans are being formulated to market the heater on a much wider scale than heretofore.

It is said that laboratory tests have proven the heater to have 95 per cent heat efficiency. It is approved by the Underwriters' Laboratories and is described as an exhaust heater entirely without fire hazard or danger of leaking fumes. The valve is so designed that only four sizes are required to fit 90 per cent of all cars. The interior construction of the valve is such that there is no back pressure on the motor so that the efficiency of the motor is not affected.

Another feature is the method of heat insulation. A double walled flexible metal tube connects the valve on the exhaust pipe with the heater casting, which is under the floor plate. The valve is so designed that gases coming from the motor are deflected into the inner tube, where they pass through the coils of the heater casting and return through the outer tube to the exhaust pipe. No extra tail pipe is required.

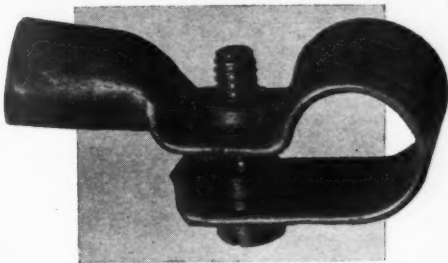
This double tube arrangement provides heat insulation for the hot gases coming



Noble heater

from the engine as they are surrounded by the gases which are still hot passing back from the heater casting to the exhaust pipe. It is pointed out by the manufacturer that in the Noble heater only the outer tube is surrounded by the cold air and so only gases passing back to the exhaust pipe after they have given up their heat into the car and cooled and condensed. This condensing of the waste gases, it is claimed, improves the efficiency of the heater rather than otherwise because it reduces whatever slight tendency to back pressure may be present and speeds up the circulation through the heater casting.

The Eclipse battery terminal is made of heavy gage copper tubing heavily coated with a pure tin and lead alloy by a double-dipping process. The copper tubing gives it high electrical conductivity and flexibility, and the tin-lead coating protects it from the corrosive effect of the electrolyte. The brass screw and



Eclipse battery terminal

nut also have this protective coating. Due to its flexibility a small pressure on the adjusting screw is said to give good electrical contact with the terminal.

When the terminal is to be disconnected, backing off the adjusting screw forces the two arms of the clamp apart thus releasing the terminal without putting any strain on the post of the battery even when the corrosion has progressed so far as to freeze it to the terminal. The end for attachment to the cable is completely enclosed and is tinned so that it is a simple job to make a good soldered connection at this point. The manufacturer of this device is the R. L. Spitzley Heating Co., 246 Larned Street West, Detroit.

## The Autohave Ash Receptacle

The Autohave Ash Receptacle is made in three parts, base, removable receiver

and clamps which permit of its being attached to any part of the car. It is made of aluminum by the Torrington Specialty Co., Torrington, Conn.

## Rae-Lite Products

Two new Rae-Lites are announced by the Rae-Lite Mfg. Co., Baltimore, Md. They are the Model 200 parking light, listing at \$2 and a combination stop and parking light which sells for \$3.25 and \$3.75. The parking light base is sturdily constructed of nickel brass and the two colored lens (red and white) is made in one piece. The light is furnished complete with bulb, nuts, screws, ready for installment in individual cartons.

The combination stop and parking light is made of brass also—in enamel it lists at \$3.25 and in nickel at \$3.75.

## Reliable Balloon Tire Jack

The No. 7 Reliable Balloon Tire Jack, made by the Elite Mfg. Co. of Ashland, Ohio, is making an impression in the automotive accessories field.

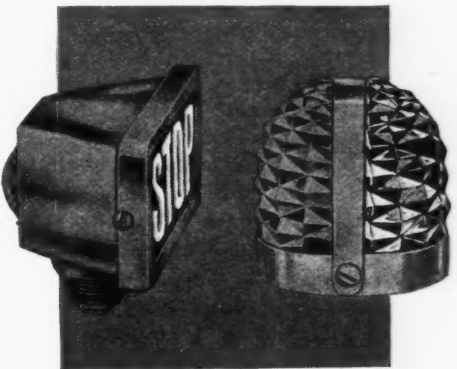
Its features are compactness, strength, and lifting range. It meets the demand for a jack less than 7 inches in height and capable of raising to 17 inches.

The new Reliable Balloon Tire Jack is only 6 1/4 inches high and raises more than 10 inches to 17 inches high, ample clearance for the largest balloon tires.

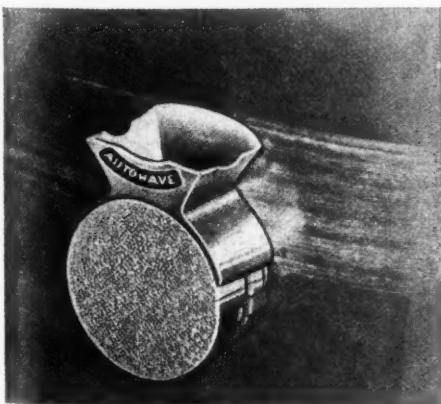
A patented, double-screw construction works both upper and lower screws simultaneously the upper screw and top remaining rigid. The lifting capacity of this new jack is 4,000 lbs. A 36-inch folding handle is supplied with the jack. Its weight is 8 lbs. and the list price \$7.50.

## Detroit Auto Anti-Theft Device

The Detroit Auto Anti-Theft Device is the product of the Detroit Auto Anti-Theft Corp., 2038 Michigan avenue, Detroit. It is not a lock but a device which is hidden from view on the car and may be connected to any automobile. A thief may start the engine but when attempting to drive the car away, the engine automatically stops and sounds an alarm which cannot be turned off until the owner arrives. The price is \$4.75.



Rae Lite stop and parking lights



Autohave ash receiver

# BOOSTING ACCESSORY SALES

**T**HE Rex Accessories Sales of Racine, Wis., have announced a new combined Oil Circulator and Gage System for Ford cars.

This device consists essentially of a means for forcibly circulating oil through the front of the engine and at the same time providing an indicating oil gage which is visible from the driver's seat in the car.

Circulating the oil through the engine insures all bearings being thoroughly lubricated even when the car is on the steepest grades. It also provides insurance against damage to the engine bearings in case the regular Ford oil pipe becomes clogged.

Since the oil gage itself is at all times within the driver's sight, it enables him, when driving, to tell at a glance whether there is sufficient oil in the engine. It saves the inconvenience of reaching under the car to open the oil level petcocks.

This device is easily installed without any special tools and no drilling of holes is required. A small notch cut in the front toe-board allows the indicating gage to be plainly seen just under the coil box. This device is priced at \$2.50.

## Gaspac Inner Tube

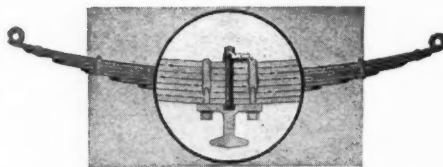
In order to prevent deterioration of inner tubes before they are used, the Ajax Rubber Co., Trenton, N. J. has developed a metal container in which Gaspac, its new tube, is hermetically sealed. The container is filled with a harmless, non-inflammable, non-explosive gas, and it is claimed that this procedure preserves the rubber indefinitely and retains for the tube all its original life and vitality by keeping it free from exposure to light and air.

This container makes it possible for car owners to carry the tubes in tool boxes without danger of injury through contact with heavy tools. The can is opened by winding a narrow strip from the outside of the rim.

## Losee Car Heater

A heater designed especially for the 10-C Franklin and which combines all the requirements for properly heating and ventilating the car has been brought out by the Losee Motor Products Co., Hebron, Ill. By making use of the pressure air system of the Franklin it is possible to force fresh clean air over the hot exhaust manifold at high velocity.

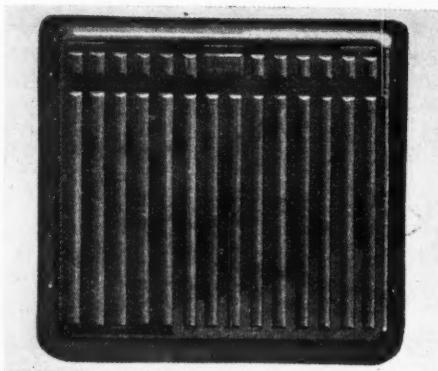
This air becomes heated in the jacket and is carried through tubing to the registers located in the dash and tonneau floor. Each register is provided with a control shutter to vary the temperature.



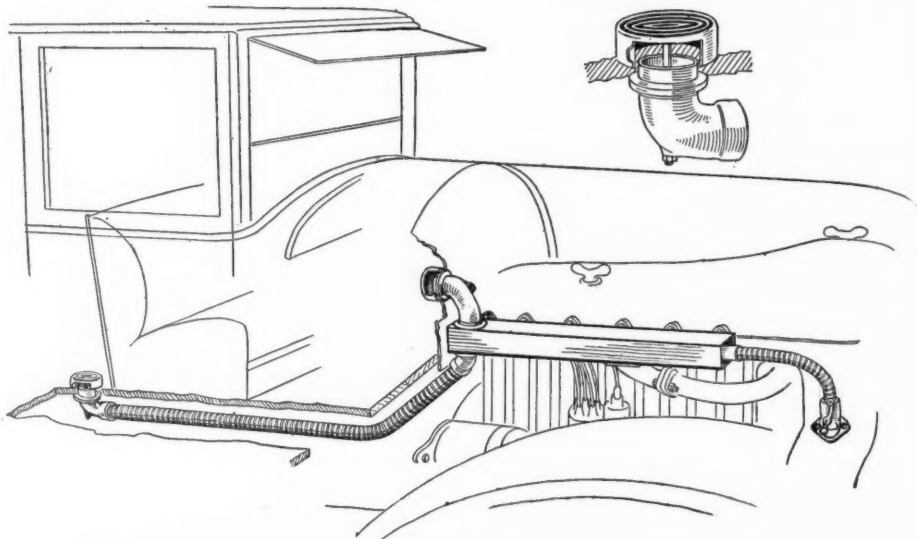
*Beco Spring Lubricator*



*Gaspac Inner Tube*



*Parsons Radiator Shield*



*Losee Car Heater*

These registers are so placed that the openings face the doors and hence deliver the heated air in the most desirable direction.

The jacket is made of heavy blue finished steel and is attracted to the exhaust manifold by three 1/4-in. bolts. The air pressure control valve and elbow fittings are cast aluminum and the registers are polished aluminum and black to match the car trimmings. The connection leading to the register in the dash is flexible, eliminating all strains. Franklin Butler Motors, Inc., 214 West 28th street, Chicago, are sole distributors.

## Parsons Radiator Shield

Made of pressed steel, the Parsons Radiator shield is designed to afford protection by warding off cold air, rain, snow and sleet. It is operated from the dash and is adjustable to three positions,—closed, partly open and fully open. It is for use on Fords and Chevrolets, the price being \$5.50 and \$6 respectively. Freight is added west of the Rockies. This is the product of the Parsons Mfg. Co., Detroit, Mich.

## Beco Spring Lubricator

The Bonham Engineering Co., Oxford, O., have brought out the Beco Spring Lubricator, a special grease connection that takes the place of the center bolt and acts as an inlet for the lubricating grease to the springs. Reference to the photograph shows the Beco into which grease is forced with a gun directing it about eight inches each way from the center of the spring and leaving it to the action of the spring to carry it to the ends. The Beco sells at \$14.50 per set, including installation charges and the model designed for Ford cars sells at \$7.50, including installation.



# EDITORIAL

## When Price Is Quoted

THE most interesting advertising in the world is that in which a definite price is quoted for a specific article. The automobile industry has thrived on that kind of advertising and many other industries have recognized its persuasive power.

But one branch of the automotive industry has suffered for lack of price quoted in advance. The maintenance division of this great industry has been the goat. Prices for repair operations have varied so greatly that customers were justified in losing confidence in the service shop. But it may not have been any fault of the shop proprietor. It was merely the fault of the method.

When one undertakes to charge for a definite repair operation according to the time consumed in the performance of the operation there enters a most uncertain element—the human attitude. Under such a system one workman may perform the operation in twice or three times the time it would require a more earnest and faithful workman. There is no incentive to efficiency except the workman's own pride in his work, and too often that is not strong enough to do any good.

But when a repair operation, as the half-soling of shoes, is charged for at a definite price quoted in advance the efficiency of the workman becomes a paramount consideration and only the efficient will be able to hold their jobs. When one goes further and pays the workman in proportion to the work he does his efficiency is still further increased. Some automotive maintenance shops have recognized these truths and are quoting definite prices for repair operations. Many others are contemplating the installation of such systems and the industry as a whole is benefiting thereby.

## Winter in the Shop

TIMES have changed since it was the practice of the automotive maintenance shop to virtually close its doors in winter time and wait for spring to bring out cars and business. This is especially true of the shops in the large and small cities and on through paved highways.

"There is no such thing as slack time with us in the winter," said the proprietor of a shop in a large city. "It seems that all the cars in our neighborhood are out all winter and with the snow and ice and rain, there are so many accidents that it crowds us to keep up with the repair work."

Two lessons in one:

First, the car owner will drive his vehicle all winter if the roads are any good and naturally there will be a lot of maintenance work to do.

Second, slippery streets, and snow and rain create a great hazard to the safety of the occupants and to the car itself. The wise automotive merchant will take advantage of this situation to sell chains, windshield wipers, heaters, engine warmers, and other practical aids to comfort and safety.

## Automobiles and Safety

NO organized industry or group is more active in promoting safety than is the automotive industry. At the congress of the National Safety Council at Louisville, Ky., last week, representatives of the National Automobile Chamber of Commerce and the American Automobile Association were in the forefront in the advocacy of methods by which automotive transportation can be made less hazardous to both the users

of automotive vehicles and those who use the highways otherwise.

The N. A. C. C., primarily interested in the widest possible sale of motor vehicles, has gone further than any other group in advocating strenuous measures to make traffic safer. It has sponsored a proposal that whenever an automobile owner or driver be duly convicted of reckless driving he be deprived of the use of the vehicle for a definite period. It is believed that this would be the most efficacious punishment that could be inflicted on this type of driver who all too often regards fines and reprimands as trivial matters.

The vast majority of automobile owners and drivers are good citizens and not guilty of recklessness. The few who indulge in this dangerous business are the menace not only to other traffic but to the good name of the industry. It is important that they be eliminated and whatever degree of severity of punishment that is necessary to eliminate them is undoubtedly justified.

## Grade Crossing Death Traps

THE news on Monday morning in the Chicago Tribune: Sunday crashes, the majority at rail crossings, cost toll of 27 auto dead.

And here are excerpts from the story in which fatal grade crossing accidents throughout the country were summarized:

Fort Allegheny, Pa., reported the worst disaster. The mother, two daughters and four sons of one family were killed when a train hit their car. John Fitzell, the father, was so seriously injured that he may die.

At Walnut Ridge, Ark., four members of one family were killed when an automobile driven by the Rev. Fisher Jones was struck by a train. The minister, his wife, and two of their children died, while two other sons were injured.

Two women and a man were killed near Rocky Ford, Colo., when a train struck their automobile.

Thus the story goes from week to week and day to day. Fatal accidents charged against the automobile.

This is a problem for the automotive industry to interest itself in. It is a problem for state highway commissions and the Federal Bureau of Public Roads. It is a paramount safety problem and it must be solved in the interest of the progress of automotive transportation.

The way to solve it is to build highways under or over the railways.

## Sell Automotive Christmas Gifts

NO line of merchandise appeals more to the general public than that carried by the automotive merchant. Every one is interested in motor vehicles. Nearly every family has its car and some have more than one. The car in most families is an object of pride—both of appearance and performance.

The Christmas season offers an extremely good opportunity for the automotive merchant to sell automotive supplies and accessories for the millions of vehicles in the hands of proud owners. People have been taught in recent years to be practical in their Christmas giving with the result that useless novelties are now almost wholly ignored when the holiday buying season starts.

But in automotive accessories and equipment the holiday shopper finds merchandise both useful and ornamental and of a nature to be highly appreciated by every owner or driver of a car. The market is a tremendous one and through the efforts of the Automotive Equipment Association it is being intensively cultivated. It only remains for the dealer to do a little cultivating himself and then reap the harvest.

# September Production Pace Continues

## Automobile Buying Steady but Displays No Unusual Strength

### While Farmer Shows Interest He Fails to Develop as Large Factor in 1924

NEW YORK, Oct. 6.—Schedules in automobile producing plants are being maintained at the September rate of operations with the possibility that they may be increased later in the month. Manufacturers are not fixing definite programs, however, due to the uncertainty of immediate development in sales volume. Present indications do not point to a marked movement forward in buying until after the election, at the earliest.

Buying is steady but not featured by unusual strength. The farmer is showing interest in new cars but he has not yet made purchases in any number nor is it expected now that as a new car buyer he will develop into an important factor until early next year. His disposition to purchase used cars, showing itself in sections where agricultural depression has been the greatest, is indicative of his conservatism and his sustained interest in the automobile. It is taken as an indication of his readiness to become a new car purchaser as soon as he finds himself on a firm financial footing.

### Not Behind Expectations

Although production totals are not equal to those of 1923, the year so far is not falling behind the expectations of producers. The marks of 1922 are being exceeded and no discouraging aspects are presented through a comparison of the figures of last year and this. Three-quarters of this year have produced 2,542,684 passenger cars, compared with 2,349,940 for the entire year of 1922 and 2,741,764 for the nine months of last year.

In the full twelve months of 1923, passenger car production amounted to 3,637,216, a figure that will not be reached this year, not only because output has been lighter but because fourth quarter operations will not be pushed as they were a year ago when it was felt that heavy demand the first quarter of the following year necessitated large stocks in the hands of dealers. Such heavy stocking as took place a year ago will be absent in the next three months due to the desire of the industry to avoid any such condition as developed in the spring of 1924.

The showing that has been made by the industry this year is, in fact, very satisfactory. Only with the continuance of exceptional conditions such as existed throughout 1923 was it possible for the present year to reach that year's 4,000,000 car and truck production figure. Moreover, uncertainty in general business conditions proved somewhat of a sales resistance this year and this factor was not presented at any time in 1923.

## Puts Motor Ad in School Books

ATLANTA, Ga., Oct. 6.—An unusual advertising medium is being employed for advertising both sales and service by F. E. Maffett, Inc., Dodge Brothers distributor in northern Georgia, who has contracted with the city of Atlanta to supply all of the schools with free text book covers that are removable and that carry the advertising of the Maffett firm.

The offer has been accepted by the Atlanta schools and while the cost from Maffett's standpoint is comparatively large the amount of advertising thus obtained, he states, makes this medium a comparatively cheap one, considering the circulation and the fact that the advertising continues throughout the entire school year at the single cost.

It is very likely that this year total production of motor vehicles will mount to 3,500,000, which is all the industry as a whole looked for at the beginning of operations the first of the year.

## Velie Sales for Last Month 193 Per Cent Above August

MOLINE, Ill., Oct. 3.—Actual sales of the Velie Motors Corp. jumped 193 per cent last month over August, according to officials of the company, who announced the addition of a total of 42 dealer contracts in the period. Overtime work has been scheduled for the entire month of October to meet the demand for the new model 60.

Excepting a period when the Velie plant was devoted entirely to war contracts, last month exceeded any previous September in Velie history. It was the banner 1924 month in a year which has been a record-breaking one, exceeding April by 16 per cent. Predictions are that within the next 60 days more than 150 new distributor and dealer contracts will have been made effective. At the plant it is said the model 60 closed car will run as high as 85 per cent of next year's production and orders on hand are in excess of capacity output.

### HEADS COMMITTEE

WASHINGTON, Oct. 4.—A. J. Brosseau, secretary of the National Automobile Chamber of Commerce and a member of the patents committee of that organization, has been named by Secretary of Interior Work to head a committee to simplify the methods of procedure and expedite the business of the Patent Office.

## Chevrolet Co. Stages National Endurance and Economy Tests

### Ordinary Stock Cars Leave Dealers' Show Rooms for Run Lasting 100 hours

DETROIT, Mich., Oct. 6.—A national demonstration of endurance and economy will be undertaken by the Chevrolet Motor Company, Oct. 7, when their dealers throughout the country start cars on a continuous 100-hour run.

Ordinarily endurance and economy runs are made by one or two cars, driven by experts, but in this case many cars operated by local drivers will make the tests under various climatic and road conditions.

The Chevrolet national contest is the outgrowth of a similar test made by the dealers in the Chicago zone of the company some eight months ago. The company estimates that at least a thousand dealers will enter the contest. Because of the large number of cars entered, the results are expected to give an accurate idea of the endurance and economy of the Chevrolet car.

The runs start from the various show rooms at 8 a. m. Oct. 7, and east route covers most of the important roads in the vicinity. The cars will be run at various speeds, much similar to the speeds that would ordinarily be made in a drive of 150 or 200 miles—slow in the congested districts and over the bad roads with speed over main trunk state highways.

The majority of the dealers participating in the run are conducting guessing contests as to gas and oil consumption and the number of miles traveled during the four days and four hours run.

Only stock cars that already have been run from 500 to 1,100 miles will be used.

It is estimated that, at the very least, each car will run up a mileage as great as would be given a car in eight months of ordinary driving.

### M'CORD FORCES TO GATHER

DETROIT, Oct. 4.—The McCord Radiator & Mfg. Co., manufacturers of copper asbestos gaskets, cork gaskets, radiators for Fords and service cores will hold its annual Sales Convention in Detroit the week of Nov. 3.

This Convention brings the field men and the District Managers together to discuss plans and policies. This year, the Silver Jubilee of McCord's participation in the industry, is proving to be the biggest in the McCord history, it is stated and expectations are that next year will be even bigger.

Headquarters for the Convention will be at the main plant on East Grand Blvd.



## Cleveland Ready for Sessions of M. A. M. A. Oct. 15-17

**Discussions Will Be Devoted to  
Business Outlook, Merchandising,  
Foreign Trade and Credits**

NEW YORK, Oct. 6.—Nothing has been left undone by the Motor and Accessory Manufacturers Association to make its annual convention Wednesday, Thursday, Friday and Saturday of next week at Cleveland its usual success. E. P. Chalfant, chairman of the program committee, has prepared a most attractive list of speakers who will follow closely the chosen theme, "Getting Ready for Better Business," while C. E. Thompson, chairman of the Cleveland committee of arrangements, is ready to care for his guests when they arrive next Wednesday, and register at the Hollenden.

Sessions will be devoted to the business outlook, to improved merchandising methods, to foreign trade and to the handling of credits. The complete program follows:

### WEDNESDAY, OCT. 15, 10 A. M.

Registration at Hollenden Hotel.

#### Afternoon Session, 2 P. M.

Address of Welcome—William H. Hopkins, Cleveland City Manager.

General Manager's Report—M. L. Hemmaway, general manager, M. A. M. A.

G. Bremer Griffin, chairman, manager, Automotive Division, Westinghouse Electric & Manufacturing Co.

Theme: "The Outlook for Better Business—1. The Case for Better Business," Richard F. Grant, president of the Chamber of Commerce of the United States. "2. Automotive Outlook," Alfred Reeves, general manager, National Automobile Chamber of Commerce; W. O. Rutherford, president, Rubber Association of America; G. Brewer Griffin, president, Motor and Accessory Manufacturers Association.

Evening—Banquet at Hollenden Hotel.

### THURSDAY, OCT. 16, 10 A. M.

Theme for both sessions: "Better Merchandising as the Foundation of Better Business."

E. P. Chalfant, chairman, chairman of the board, Gill Manufacturing Co.

"1. The Jobber's Place in the Automotive Selling System," J. H. Mehan, manager, Research Club.

"2. Selling Through the Specialty Distributor," J. M. Shoemaker, distribution manager, Perfection Heater & Manufacturing Co.

Discussion.

#### Afternoon Session, 2 P. M.

"3. Getting and Holding the Interest of the Jobber Salesman," L. A. Safford, vice-president, McQuay-Norris Manufacturing Co.

"4. Making the Jobber or Distributor Part of the Manufacturers' Advertising Program," C. A. Musselman, president, Class Journal Co.

"5. The M. and A. M. A. Show Program as a Merchandising Medium," Neal G. Adair, manager, show department, M. A. M. A.

Discussion after each paper.

#### Evening Session, 8 P. M.

Theme: "The Foreign Trade Opportunity—How to Take Advantage of It."

Guy A. Wainwright, vice-president, Diamond Chain & Manufacturing Co., chairman.

"1. Selling the Foreign Trade, (a) Through an Export Department," J. F. Kelly, export manager, Electric Storage Battery Co.; (b) Through a Combination

Export Manager," H. L. Kraus, export sales agent.

Discussion after each paper.

### FRIDAY, OCT. 17, 10 A. M.

Theme for both sessions: "Better Credit Work as an Aid to Better Business."

M. A. Moynihan, chairman, secretary and treasurer, Gemmer Manufacturing Co.

"1. Facing the Facts," Ludwig Kemper, treasurer, Midland Steel Products Co.

"2. Handling Foreign Credits," J. L. Thompson, credit manager, Yale & Towne Manufacturing Co.

Discussion.

#### Afternoon Session, 2 P. M.

R. S. Harvey, vice-president, Rers Manufacturing Co.

"Jobbers' and Distributors' Credits," J. K. Willis, credit manager, Black & Decker Manufacturing Co.

Discussion.

### SATURDAY, OCT. 18

Golf tournament.

## N. A. C. C. Directors Receive Encouraging Retail Reports

NEW YORK, Oct. 6.—Encouraging reports as to retail conditions were received by the directors of the National Automobile Chamber of Commerce, who held their monthly meeting last week. According to information sent in by the Chamber's correspondents throughout the country, sales prospects for passenger cars this fall are generally better than in autumn last year. The truck outlook is not quite so promising, although it is predicted it will equal that of the final quarter of last year. September this year with the trucks was about the same as September, 1923.

It also was reported that the farm market prospects for cars promises to be better than a year ago, while there will be no falling off in demand for trucks. Time sales, the scouts state, are slightly larger than this time last year and approximately the same for trucks.

## 15,552,077 Cars and Trucks Registered July 1, Says U. S.

WASHINGTON, Oct. 4.—The United States Bureau of Public Roads announces that there were 15,552,077 cars and trucks registered in the United States on July 1. This is within 28,179 of the total of 15,523,898 reached by Automotive Industries and published in the July 24 issue of MOTOR AGE two weeks after the end of the half year period.

In the matter of collections from registration, licenses and permits, the Government total was \$199,472,682, while Automotive Industries reported \$195,821,622.

In addition the Bureau reports that gasoline taxes in 36 states yield \$32,430,410.

### NEW SALES BUILDING

CHICAGO, Oct. 4.—George Marquette Motor Sales Co. Edison Park, Ill., will shortly move into a new one-story brick building. The display room will have a space 50x50, the entire building being 50x144. Dodge Brothers and Jordan cars will be merchandised.

## Control of Graham Company Acquired by Dodge Brothers

**New Division Will Maintain Own  
Organization and Identity, Says  
Announcement by Haynes**

DETROIT, Oct. 6.—Through acquisition by Dodge Brothers, Inc., of control of Graham Brothers, that company will in the future be operated and known as a division of Dodge Brothers, according to an announcement this week. So far as the general operations of the Graham company are concerned the change is largely in form rather than in effect, the company maintaining its own organization and identity. In the announcement to dealers of the change, F. J. Haynes, president of Dodge Brothers, says:

"In 1921 Dodge Brothers became the exclusive marketing organization for Graham Brothers trucks. Since that time these trucks have demonstrated that they possess the merit required of a product associated with Dodge Brothers name. Dodge Brothers confidence in Graham Brothers as well as in the product has prompted the action that has brought about a closer union between the two organizations. Although Graham Brothers will be known and operated as a division of Dodge Brothers it will continue as a separate unit, maintaining its own organization and individual identity."

The Graham company has been closely identified with Dodge Brothers since its inception. Entering the truck field from the commercial body field, it employed Dodge Brothers units as the principal features of its chassis construction and sold exclusively through the Dodge Brothers dealer organization. Its principal factories are at Detroit and Evansville, Ind., the latter being the body-building headquarters. The Graham trucks are made in three chassis models, one ton, ton and one-half and a special bus chassis on which it mounts its special sedan bus. Dodge Brothers commercial car is mounted on the regular passenger car chassis with minor modifications for commercial usage and is rated at three-quarter ton. With the Graham line the company has full representation in the commercial car field up to ton and one-half.

### PLAN INTERNATIONAL SHOW

WASHINGTON, Oct. 6.—Plans are being made by the Chamber of Automotive Industries, in conjunction with the Royal Automobile Club of Victoria, Australia, for a large automobile show to be held in Melbourne, the middle of 1925. Trade Commissioner E. G. Pauly, at Melbourne, advised the automotive division of the Department of Commerce.

It is planned that the show shall be international and profits from the display are to be divided among the exhibitors as a contribution toward their expenses.

## Hoover Committee Opposes Compulsory Insurance Law

### Approve Act Giving Priority to Damage Claim Over Dealers' Lien and Hear Protest

WASHINGTON, Oct. 4.—Two questions of paramount interest to the automobile industry were taken up this week by the committee on Insurance and Highway Safety, of the Hoover Traffic Safety Conference, which will have its meeting early in December.

The first of these questions, which the Insurance Committee is seeking to solve is whether compulsory automobile insurance will be a deterrent factor in minimizing highway accidents.

The second, and one which the automobile industry itself will vigorously protest, is whether a dealers' lien can be abrogated when the owner of the purchased automobile is responsible for the injury of someone or for property damage.

On the first question of whether compulsory automobile insurance minimizes accidents, the Committee found that rather than minimizing the number of accidents that it tended to cause an increase. As a result of the study made by the Committee it is likely that no National Compulsory insurance law will be recommended.

It was the consensus of the committee that the proposed law relating to the dealers' lien would minimize the number of accidents as it would mean that the owners' liability would be greater and it was argued that it would prevent a dealer from selling an automobile to an irresponsible purchaser, if the risk involved was such that the dealer might lose his deferred payments through the driver's carelessness.

To such a proposition, however, the Committee was told by Pyke Johnson, representing the National Automobile Chamber of Commerce, the automobile industry would vigorously protest. He declared that it was the purpose of the Conference to devise ways and means of preventing accidents and not to identify persons that had been injured.

As a result of the N. A. C. C.'s representative's protest it was decided that the question would be put up to the conference, by the Committee, and that the Conference could decide its own course in the matter.

### SPEAKS ON FLAT RATE

ST. LOUIS, Oct. 4.—At a recent meeting of the Associated Automobile Service Companies of St. Louis, John O. Lowell, service manager of the Vesper Buick Automobile Co., St. Louis Buick distributor, spoke on the advantages of the flat rate service charge and answered questions of several of the members as to the adaptability of the flat rate system to their business.

The association arranged for a 24-hour emergency road and towing service for customers and members of the Associated Automobile Service Companies.

## Chicago Closed Car Show Exhibitors

Following is a list of exhibitors who have been allotted space for Chicago's Second Annual Closed Car Show, Oct. 11-18:

Apperson Motor Car Co.—Apperson.  
Bird-Sykes Co.—Paige and Jewett.  
Harry P. Branstetter, Inc.—Kissel.  
Buick Motor Co.—Buick.  
Cadillac Motor Car Co.—Cadillac.  
Chevrolet Motor Co.—Chevrolet.  
Chicago Flint Co.—Flint.  
Chicago Motor Car Co.—Jordan.  
Chicago Nash Co.—Nash.  
R. C. Cook Co.—Sterling-Knight.  
Dashiell Motor Co.—Dodge Brothers.  
Davis Motor Car Sales Co.—Davis.  
Durant Motor Co.—Star and Durant.  
Edwards & Crist Co.—Auburn.  
W. V. Faunce Motor Co.—Oldsmobile.  
Ford Motor Co.—Lincoln.  
Franklin-Butler Motors, Inc.—Franklin.  
Gambill Motor Co.—Hupmobile.  
Louis Geyler Co.—Dort and Case.  
Gormon Motor Sales—Wescott.  
Thomas J. Hay, Inc.—Chandler.  
Tom Hay & Son—Cleveland.  
Hudson Motor Co. of Ill.—Hudson and Essex.  
Lexington Motor Co.—Lexington.  
L. Markle Co.—Rickenbacker and Rollin.  
Maxwell-Chalmers Sales Co.—Maxwell and Chrysler.  
Oakland Motor Car Co.—Oakland.  
Overland Motor Co.—Overland.  
Packard Motor Car Co.—Packard.  
H. Paulman & Co.—Pierce-Arrow.  
Quinlan Motor Co.—Moon.  
Reo Motor Car Co.—Reo.  
Rochford Motor Co.—Elcar.  
Eugene Silver & Co.—Cole.  
Smith-Sauer—Marmon.  
Stratton-Keenan Peerless Co.—Peerless.  
Studebaker Sales Co.—Studebaker.  
Stutz Chicago Co.—Stutz.  
Velie-Bell Co.—Velie.  
Western Motor Car Co.—Stearns-Knight.  
Wills Sainte Claire Co.—Wills Sainte Claire.

## Receiver Asks Permission to Sell Columbia Motor Car Co.

DETROIT, Oct. 6.—Application for an order to sell the plant and property of the Columbia Motor Car Co. on Oct. 21 has been filed by the Security Trust Co., receiver and trustee in bankruptcy. The order is expected to be issued at once, following which the sale as of that date will be advertised. The property will be sold in three parcels or in entirety. As it is a bankruptcy proceeding, there is no set price fixed by the court on any of the parcels or the plant in entirety.

### SIGNS FOR HUDSON-ESSEX

ST. LOUIS, Mo., Oct. 6.—The Barker Motor Car Co., of which Z. A. Barker is president, has been authorized as a Hudson and Essex dealer with quarters in Maplewood at 2607 Bellevue avenue.

## Chicago Trade Stages Second Closed Car Exhibit Oct. 11-18

### Displays to Occupy Practically All Space Available in Coliseum and Annex

CHICAGO, Oct. 6.—Everything is in readiness for the Second Annual Closed Car Show under the auspices of the Chicago Automobile Trade Association Oct. 11-18. It will be staged at the Coliseum and occupy practically all space in the Coliseum proper and the annex. Forty-one Chicago distributors, representing still more cars, will participate. In view of the closed car's rapid and steady rise in popularity and the strong proportionate demand for such models now, compared with the demand for open cars, the exhibit is expected to produce highly pleasing results. By starting the show on Saturday it is hoped that it will begin with a large first-day attendance, Saturday being virtually a half-holiday with much of the public, and that Sunday's publicity will help sustain a good attendance through the following week.

Harry P. Branstetter, Kissell distributor, and chairman of the show committee, looks for an attendance during the week's exhibition around 100,000. Mr. Branstetter's committee has worked on arrangements for the show for some time and scored 100 per cent on the signing of Chicago's distributors, all of them having contracted for space.

### Permanent Institution

This will be Chicago's second annual closed car show, but the event no doubt has already established itself as a permanent fixture of the future. There is a feeling in the trade that a large exhibition at this period of the year calling special attention to vehicles built and equipped ideally for winter use is very timely. The show is deemed especially appropriate this year because of the obvious fact that the closed car is much on the public mind. "A large part of the motoring public is committed to the closed car on the strength of its merits," said one of the exhibitors, "and consequently it is a good thing to exploit the article that is in such demand. It is good merchandising to push that which sells most readily, or in other words, push what the public wants. It takes much less sales effort now to dispose of a closed car than an open model."

### OPEN SIX G. M. C. BRANCHES

DETROIT, Oct. 6.—The opening of six new direct factory branches by General Motors Truck Co. at Albany, N. Y., Newark, N. J., Fort Wayne, Ind., Fort Worth, Texas, Tacoma, Wash., and Columbus, Ohio, is declared by the company to be in line with its plans to improve its service facilities in all territories to the highest possible point. Each of the new branches will have complete service equipment worked out by the factory and will be under the supervision of factory trained service men.



## 53 Passenger Car Makers to Display Wares at Big Shows

**Representation Smaller Than Last Year. Equipment Exhibits Likely Will Make Up Shortage**

NEW YORK, Oct. 2.—Drawing for space in the silver jubilee shows to be held in New York Jan. 2-10 and Chicago Jan. 23-31 took place today at headquarters of the National Automobile Chamber of Commerce at the general meeting of that organization.

Space was assigned to 53 manufacturers of passenger cars, while five taxicab makers were cared for. This is a smaller representation of the car making branch of the industry than in the last shows when 62 makes of passenger cars and seven taxicabs were displayed. Those missing this time include Anderson, American, Barley, Columbia, Dort, Elgin, H. C. S., Lafayette, R & V, Roamer, and Templar.

Rollin is the only new one making its show debut, this being the first time it has been in the show proper. Ambassador, which has been out for several years has returned to the fold while the Stanley Steamer, now manufactured by the Steam Vehicle Corporation of Syracuse, again will show after having been out for some time. Dupont is the only one which will not be in the Chicago show, specifying New York only in its application.

In the taxicab section Pennant, R. & L. and Dodge are not on the list, while the newcomer is the H. C. S., the manufacturer of which invaded the taxicab field during the past summer.

Those that were allotted space were:

**Passenger Cars**—Ambassador, Apperson, Auburn, Buick, Cadillac, Case, Cole, Chrysler, Chevrolet, Cleveland, Dodge, Durant, Dupont, Davis, Elear, Essex, Flint, Franklin, Gardner, Gray, Haynes, Hudson, Hupmobile, Jewett, Jordan, Kissel, Lincoln, Lexington, McFarlan, Maxwell, Moon, Marmon, Nash, Oldsmobile, Oakland, Peerless, Pierce-Arrow, Packard, Paige, Rickenbacker, Reo, Rollin, Studebaker, Stanley, Stearns, Star, Stutz, Vellie, Willys-Knight, Willys-Overland, Wescott and Wills Sainte Claire.

**Taxicabs**—Yellow, Checker, Reo, Premier, H. C. S.

While space has not as yet been assigned to manufacturers of parts and accessories, it looks as if the equipment people will more than make up for the falling off in the number of car makers displaying. At the present time there are more than 200 applications on file and it is thought that the final count will show a larger representation than last year.

Undoubtedly this strong representation of the parts and accessory makers has been brought about by the trade days feature of the national shows. The Motor and Accessory Manufacturers report that because of this alone twenty-three concerns which were not in the last shows have asked for space allotments in the approaching exhibitions.

## Blows Trumpet for Traffic Signals

WASHINGTON, Sept. 24.—The traffic problem in Berlin is not what it is in New York. Neither is the method of handling it.

According to advices from American Trade Commissioner Douglas Miller to the Automotive Division of the Commerce Department, the city officials in Berlin have stationed ten policemen in Potsdamer Platz in an effort to educate the vehicular public in its movements across this central square.

A platform has been erected in the center of the platz, on which a policeman with a trumpet like an old-fashioned dinner horn gives general signals for traffic. The other nine policemen spend their time watching the white lines on the seven streets running into the square. These new measures are attributed to a recent visit of city officials to the United States, and newspaper articles which have featured illustrations of Fifth Avenue traffic towers.

## Heavy Stocks Reason Given for Gasoline Price Slash

New York, Oct. 4.—Heavy surplus stocks and the approach of the end of the touring season are the reasons given for drastic cuts in the price of gasoline announced this week in the New England and Middle Atlantic States. These reductions bring prices to the lowest level recorded in ten years.

The Gulf Refining Co., the largest independent oil company operating in the country, cut four cents a gallon in Massachusetts and three cents in other eastern states, so that the wholesale prices now range from 13 to 14 cents a gallon. The Standard Oil Companies have met this with a 1 cent drop but it is expected they will meet their rivals' price.

## Postpone National Truck Show Until November 16-22

CHICAGO, Oct. 4.—The First National Transportation Show which was to be held in the American Exposition Building, Chicago, October, 21-27 under the auspices of Motor Truck Industries, Inc., has been definitely postponed until the week of Nov. 16-22, according to William N. Hallanger, manager of the truck association. Mr. Hallanger was in Chicago from Detroit, the association headquarters, on business in connection with preparations for the show. He stated that conflict of the original dates for the event with another Chicago exposition made postponement expedient.

## N. A. C. C. Places September Output Slightly Under August

**Shipping Return Figures Indicate Production of 274,300 Cars and Trucks in Ninth Month**

NEW YORK, Oct. 6.—An estimate based on shipping returns made by the National Automobile Chamber of Commerce places September production of cars and trucks at 274,300. This is 1.73 per cent under August's total of 279,115 and 16 per cent under September, 1923. Last year September was 5 per cent under August.

With returns in for the first three quarters of 1924, the industry swings into the home stretch 6 per cent under the production figures for the first nine months of 1923, the total for the period being 2,814,487 as against 2,991,969 for the same stretch a year ago. Going into the final quarter 177,482 behind the count of 1923, it is practically a certainty that the record-breaking four million total of that twelve-month will not be reached.

### May Keep Present Pace

It would seem, taking it for granted that the industry will go the last quarter at the same pace it has been holding of late, that the total for the year will be around 3,500,000—maybe 3,700,000 if the anticipated Fall business and farmer buying materializes. It is doubtful if production will be pushed to the same extent it was a year ago in the last quarter, for it is extremely doubtful if there will be the stocking of cars by dealers that marked the windup of the industry's bumper year.

Comparing this and last year by quarters the statistics reveal that whereas in 1923 the big period was the second quarter, this time the factory rush came in the first three months. At that, this year's first quarter count of 1,066,279 did not touch the 1,155,511 of the second quarter in 1923.

Production by quarters this year and last was as follows:

	1924	1923
First quarter .....	1,066,279	875,582
Second quarter .....	931,890	1,155,511
Third quarter .....	816,318	1,000,876
Total .....	2,814,487	2,991,696

### TO SHOW RIGHT-HAND DRIVE CAR

DETROIT, Oct. 4.—Reo Motor Car Co. will exhibit right-hand drive cars for the first time at the Olympia show, London, according to a factory statement. A cut-away chassis will also be exhibited at this show and at other important shows on the continent.

The Reo company has been building speedwagons with right-hand drive for the last three years to accommodate the traffic rules of foreign countries, but the Reo car has never been shipped with this drive. The change is now made because of the strides the company is making in its car business in England and other countries in which this drive is used.

## What Congress Did for Motor Field on Tax Is Moot Issue

**While Intent Was to Relieve Industry Real Effect Appears to Be Much Clouded**

WASHINGTON, Oct. 4.—Just what were the federal excise taxes which Congress, in its wisdom and efforts to raise funds, sought to impose on the automobile industry?

The basic law, it was thought, was specific, but interpretations put on the law by the Solicitor's office of the U. S. Bureau of Internal Revenue, and recently published, have opened up the flood-gates of doubt and now again it is a mooted question.

The intent, it is agreed, was to relieve the automobile industry of some of its excise tax burden. Under the ruling, however, of the Revenue Bureau, this now appears to be in doubt.

The following citation will illustrate: Under the old law, batteries, which were not used in automobiles were tax free. Under the new ruling, a company may make a certain battery which is used in both automobiles and by millions of radio users. Because of the fact that this is possible not only is the battery used in the automobile taxable, but all other batteries which are sold for radio use.

Another example: Motors, radiators, tires, spark plugs, etc., might be sold for use on an aeroplane. Under the old law they would be tax free. Under the new interpretation, there is a possibility that they can be used for automobiles and manufacturers must, under the new ruling, pay a tax on every motor, radiator, tire or spark plug built.

### Old and New Practices

All that was necessary under previous regulations was for the manufacturer to secure a declaration from the purchaser that the motor, radiator, tire or spark plug was not for use in an automobile and it could be sold sans a tax. Under the new interpretation, the Bureau states that a motor radiator, engine, tire, battery, etc., is an automobile part—whether used for that purpose or not—and therefore under the law is taxable.

This, it is agreed by both representatives of the automobile industry who conferred with government officials, and also the officials themselves, was not the intent of Congress.

In an effort to secure an early and fair ruling on these and other tax matters, coming under the new automobile section of the law, the delegation of automotive men conferred with Federal tax officials.

Little progress was made it was admitted, but a reconsideration of some of the interpretations was promised to the committee which included Alfred Reeves, general manager of the National Automobile Chamber of Commerce, R. A. Bannigan, counsel of the N. A. C. C., and

## Vision and Reading Test Proposed

CLEVELAND, Ohio, Sept. 22.—An Ohio license law requiring automobile drivers to pass a simple eye test and to be able to read simple English is the object of a campaign to be started this fall by the Cleveland Safety Council of which Adam Lintz is manager.

Every candidate for election to the Ohio legislation will be asked to go on record either for or against such a law. Mr. Lintz believes that all motorists should be able to read and understand the "Stop", "Go" and "Detour" signs.

M. L. Hemmingway, General Manager of the Motor and Accessory Manufacturers.

### Taxes Broadcast

"We left the Bureau with the feeling," said Mr. Bannigan, "that while Congress tried to cut off a little of our taxes that under the new law and rulings more taxes have been broadcast, like wild oats, among the motor, battery and engine manufacturers—taxes which were heretofore exempt under the old law.

"However, there is no feeling on our part that this is the fault of the officials in the Internal Revenue Bureau. They have interpreted the law, as they believe it to be written, and are not the makers of the new tax bill."

The position that parts, etc., made by automobile and accessory manufacturers, such as engines and batteries are taxable, although not used in automobiles, it was declared by Mr. Bannigan, is contrary to established law. He pointed out to Bureau officials the decision of the Supreme Court in the case of Magone vs. Weiderer, which was similar to the position of the automobile industry.

It was indicated by the committee that a brief would be filed by the tax committee on the National Automobile Chamber of Commerce, setting forth in writing, the points raised during the verbal discussion, and that this would be filed with the Bureau in an effort to get a clearer ruling.

## Optional Color Combinations Offered by Gray Motor Corp.

**Special Finishing for Certain Models Being Furnished at Nominal Cost Addition**

DETROIT, Oct. 6.—Gray Motor Corp. is now finishing its special touring car and sedan models in optional color combinations at a nominal increase over the list prices. The special models also include balloon tires as equipment. The color combinations on the sedan are light green gray below belt line and darker shade above, cream below belt with tan above, solid green gray, and green gray below belt with royal blue above.

### Striping to Match

On the touring car the combinations are green gray, cream and special blue. All the special paint work includes a double belt line striping to match the color combinations. The touring cars also have nicked windshield stanchions to blend with the special colors. Scuff plates are also included in the equipment. The company has desisted from making its models fully equipped so as to give its dealers opportunity for accessory sales.

Gray has adopted the slogan "aristocrat of small cars," which it will feature in all its advertising. The company is planning a system of dealer merchandising assistance which it will incorporate in its contract agreement and which will apply to every dealer in every part of the country.

## Year Ending Sept. 1, Set New Mark in Country's Motor Sales

COLUMBUS, Ohio, Oct. 4.—More automobiles than ever before were sold in this county in the year which ended Sept. 1, according to figures in the office of the Franklin county clerk of courts. The figures show that a total of 58,015 cars, new and old, changed hands during the year; 9,696 sworn statements of ownership were made; 16,251 new cars were sold in the county, and a total of \$16,443.45 was taken in from the registration of cars.

## Round-the-World Plane Gets Place in U. S. Museum at Side of Automobile Relics

WASHINGTON, Oct. 6.—One of the two original planes which completed the round-the-world flight is to occupy a position of honor in the Smithsonian Institution here, alongside the two automobiles which are now housed in the institute as a relic. The automobile represented the first step in transportation improvement and the airplanes will represent the second. The flagship "Chicago", flown by Lieut. Lowell Smith, the War Department announces, will be flown to Dayton, Ohio, and there disassembled. Later it will be reassembled and brought here.

This is being done in order to afford the air service an opportunity to make a minute examination of all parts to determine the wearing quality of metals, wood and cloth in hot, temperate and cold climates.



## Representatives of Battery Makers and Allied Concerns at Niagara Falls Convention of the National Battery Manufacturers Association



1—E. H. Emrick, Rub Tex Products Co. 2—T. A. Bartlett, Cole Battery Corp. 3—R. H. Van Nest, U. S. Light and Heat Corp. 4—A. H. Packer, Class Journal and Chilton Cos. 5—D. H. Kelly, U. S. Light and Heat Corp. 6—A. M. Callman, Triple A Specialty Co. 7—B. L. Schiffman, Acid Supply Co. 8—P. M. Marco, Marco Storage Battery Co. 9—Chas. Dempwolf, Marco Storage Battery Co. 10—A. J. Houston, Aetna Rubber Co. 11—P. C. Cole, Cole Battery Corp. 12—C. E. Gilson, Eagle Picher Lead Co. 13—L. F. Martindale, Miami Storage Battery Co. 14—C. W. Noll, Cooper Corp. 15—J. H. Gugler, Globe Electric Co. 16—H. A. Matthews, U. S. Light and Heat Corp. 17—L. W. Hottel, Vulcan Rubber Co. 18—A. F. Strayer, U. S. Light and Heat Corp. 19—H. H. Brenner, Cincinnati Storage Battery Co. 20—J. B. Perlman, Hartford Battery Mfg. Co. 21—H. A. Harvey, U. S. Light and Heat Corp. 22—A. M. Clark, The Cooper Corp. 23—W. C. Brooks, Hartford Battery Mfg. Co. 24—L. M. Minton, Miami Storage Battery Co. 25—C. A. Englert Mfg. Co. 26—A. W. Chase, Hartford Battery Mfg. Co. 27—P. B. Williams, Ahlbell Battery Container Corp. 28—R. D. Mowry, Universal Battery Corp. The convention was held Sept 26 and 27



A. A. Mowbray, commissioner of the National Battery Manufacturers' Association

### GARTLEY PERFECTS STAFF

MILWAUKEE, Wis., Oct. 6.—P. C. Gartley, general manager of the Milwaukee branch of Willys-Overland, Inc., which on Sept. 15 superseded the Overland Wisconsin Co. as Wisconsin distributor, has perfected his organization with these appointments: J. F. McEwen, wholesale sales manager; Ralph DeMarco, manager of parts sales; Charles T. Phillips, service manager; W. H. Schuett, parts and service field representative; J. P. Haggott, retail sales manager. All department heads were connected with the Overland Wisconsin Co., of which Mr. Gartley was vice-president and general manager under George W. Browne until the change to a direct factory branch took place.

### TRADE PROSPECTS BRIGHTER

COLUMBUS, Oct. 4.—Prospects for fall business in Columbus and central Ohio territory are brighter than has been the case earlier in the year. The worst of the slump is believed to be over and the industry is on the upgrade. New models which have appeared have stimulated the demand to a marked degree. There is a decided improvement in general industrial conditions and that is reflected on the automobile trade.

### Quality of Gasoline Better Than Year Ago Tests Show

WASHINGTON, Oct. 6.—Despite the general tendency of motorists to criticize the quality of gasoline offered for sale, the tenth semi-annual motor gasoline survey just completed by the Department of the Interior indicates that, on the whole, a better grade of gasoline is now being marketed than was offered for sale during the same season a year ago. Of the ten cities in which the survey was conducted by Bureau of Mines chemists, San Francisco ranked first in the average quality of marketed gasoline. Washington was the second city in this respect, with New York running a close third. The other cities in which gasoline samples were collected were Pittsburgh, Chicago, New Orleans, St. Louis, Denver, Laramie, Wyo., and Bartlesville, Okla. In collecting samples for examination the Bureau of Mines men visited filling stations and wholesale distribution plants, endeavoring to obtain as representative a collection of gasoline samples as possible.

### TO REPRESENT DUCO

MINNEAPOLIS, Oct. 6.—The new Duco business in Minneapolis is to be handled by C. F. Bort, G. W. Irein and W. J. Ehlman, with service station at 1318 Marquette Avenue.

### POLICIES NOT SERIOUSLY AFFECTED

TOLEDO, Oct. 6.—Attorneys for the Champion Spark Plug Co. do not regard the recent citation of the Federal Trade Commission as seriously affecting the merchandising policies of the company. The commission charged unfair practices in maintaining standard re-sale prices among jobbers.

"The citation is much the same as issued against many other distributors and manufacturers of nationally advertised products and in the big cases so far the Commission has been unable to make the charges stick," declared E. G. Marshall of Marshall & Fraser, attorneys for the company. "Mennen, Colgate and others have been cited for the same system of maintenance of resale prices and the commission has not been sustained. The charge may be regarded as not much more than a gentle rebuke."

### STEWART & CO. CHARTERS

SPRINGFIELD, Ill., Oct. 4.—Phil Stewart & Co. has been incorporated with \$25,000 capital, to build automobile bodies, manufacture winter enclosures for autos and repair, clean and paint automobiles at its local headquarters, Third and Jefferson Streets. The company is an incorporation of the partnership of Philip H. Stewart and Urban L.

## Present Data on W. Virginia Coal Fields as Used Car Mart

Letter Received by N. A. D. A. Manager Indicates Poor Field in Territories Around Charleston

ST. LOUIS, Mo., Oct. 6.—Requests for information which have come to headquarters of N. A. D. A. concerning the availability of the West Virginia coal fields as a used car market, caused inquiry to be made to learn the exact condition existing in that territory. It has been rumored through the industry that West Virginia presented a fertile field for the sale of used cars. C. A. Vane, general manager of the Association, advises those who have been contemplating sending used cars and used car salesman into West Virginia to read the following letter:

"I feel sure that this report (of the good used car sales in West Virginia) is not correct. At least it is not correct in this (Charleston) section of West Virginia or in any other section in my territory. I know nothing of conditions around Wheeling and it might be that cars are being shipped into that section.

"For instance I have on hand at present 15 used cars which I am unable to sell at any price, offering some of them as low as \$75 and 100. I have before me in this morning's mail a letter from a miner on Cabin Creek offering to sell his touring car for \$175 and I am buying this car.

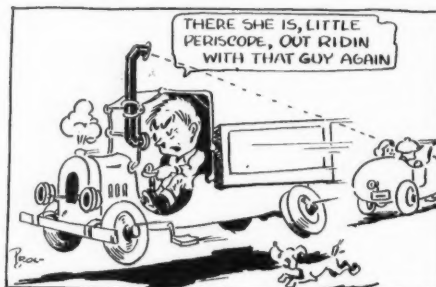
"Another of my dealers at Mt. Hope, W. Va., which is right in the heart of the coal fields, advised me that he sold one used car for \$5 and another that will run for \$10.

"Conditions in the coal fields surrounding Charleston are the worst in history and were the miners working it would be no trouble to dispose of all the new and used cars that I have on hand. In Logan County the mines are shipping as much coal as they did during the war but the wages they are paying are so small that most of the men cannot accumulate enough money to buy a car."

### FACTORY BRANCH LAUNCHED

KANSAS CITY, Oct. 4.—J. Frank Witwer, the "oldest" motor car dealer in Kansas City, has sold the Southwest Motor Co., Reo car and truck distributing agency at Kansas City, to the Reo Company, and it will become a factory branch. A company is now being incorporated under the name of the Reo Motor Car Company of Missouri, with George H. Cox, recently head of the Wyllis-Overland branch at Kansas City, as manager. The new company bought the equipment and good will of the Southwest Motor Co., and is retaining practically the entire organization. Mr. Witwer, after a vacation, will enter upon new motor car distributing connections in the east.

## Wants Periscopes on Motor Trucks



BOSTON, Oct. 4.—"You tell your automobile friends making trucks and devices that it is incumbent upon them to devise some sort of a periscope to replace mirrors upon trucks, for mirrors are useless to enable drivers to see anything in the rear; also some device to prevent skidding instead of heavy chains, which wear out our highways, and may have to be prohibited entirely by law," Commissioner William F. Williams, of the Public Works Department of Massachusetts told H. Day Baker, Secretary of the Motor Truck Club of Massachusetts at a conference in Boston.

## Excess of Patriotism Brought Splitdorf Troubles, Says Court

NEWARK, N. J., Oct. 4.—Following the refusal of the Chancery Court of New Jersey to appoint a receiver for the Splitdorf Electrical Co. and the prompt dismissal of the Halsey suit, President M. W. Bartlett has issued a statement to the industry in which he quotes a portion of the decision of the vice-chancellor, who says:

"This company is not insolvent in any bankruptcy sense. It is paying all its bills and doing a regular business. It has been losing money. Yes, but that happens to many firms and it seems that the Splitdorf concern lost out mainly through an excess of patriotism during the war, when instead of reaping profits they chipped in and helped the government. No potential insolvency appears, for their business prospects are good and they have the strong support of both their stockholders and the banks."

### GETS CLEVELAND RIGHTS

DALLAS, Tex., Oct. 6.—John L. Hofues, proprietor of the Cleveland Motors of Dallas, Texas has been appointed distributor for the Cleveland lines in Dallas and North Texas. Mr. Hofues is a veteran automobile man and plans establishing a number of agency plants in his new territory immediately.

## Freight Cars for Automobiles Sufficient But Less Numerous

Traffic Managers See Diminution of Supply But Say it Is Ample for Time Being

DETROIT, Oct. 4.—The question of automobile car supply received considerable attention at the conference of freight traffic managers of the industry held here under the auspices of the National Automobile Chamber of Commerce, with James S. Marvin, the Chamber's traffic manager, as chairman of the conferences.

The situation, however, is not alarming, despite the increased activities of the railroads and a shortage of freight cars is not expected.

"It develops that with the railroads again handling more than a million cars of revenue freight weekly, car supply for the increasing production of the automobile plants is not as plentiful, although no actual shortages are as yet reported," said Chairman Marvin after adjournment. "The feeling is that for the time being at least, no trouble will be encountered in transferring factory production to dealers."

### To Revise Some Class Rates

Reports to the meeting indicated that railroads are planning to revise class rates applying in Central freight and Eastern trunk line territories and between those districts. Tentative schedules indicate considerable increase in the rates that would apply on the higher classes which include automobiles, trucks and automobile parts.

In the all day session, specific ratings applying on lamps, carpets, steering wheels, buses and many other automobile parts were discussed in details. It is expected that changes in the classification of some of these parts will be asked of the railroads.

### EATON MAKES CHANGES

CLEVELAND, Oct. 6.—Several changes in the personnel of the Eaton Axle & Spring Co. are announced. C. I. Ochs, vice-president and general manager of the axle division, has been appointed general manager of the entire company, embodying the bumper, spring and axle divisions with plants at Cleveland, Pontiac and Albany.

C. A. Bieber has been made general manager of the Eaton Axle & Spring Service Co., in charge of the five factory branches as well as of the jobbing department of the parent company. W. J. Keegan has been chosen as assistant general manager of this division.

E. J. Cosgrave is named as sales manager of the bumper division and transferred to Detroit from New York, where he has been branch manager. The New York vacancy has been filled by the appointment of W. R. Roestel, formerly Cleveland branch manager of the Eaton company.



## Many Important Changes in New England Retail Field

### Season Sees New Faces in Different Agencies and Several Extensions of Dealer Lines

BOSTON, Oct. 6.—Many changes continue to be made in the New England territory. W. S. Sills, distributor for Chevrolet cars in New England, has secured Robert B. Keyser to keep in touch with retail sales in branches operated by Mr. Sills. He has been with Chevrolet before, but resigned to go with Durant.

The Utterback-Gleason Company, distributors in New England for the Dort and Kissel lines, has taken on the Chrysler for the territory in Maine, radiating out of Bangor.

C. P. Rockwell, distributor for the Nash and La Fayette, has cleaned up his La Fayette consignment and will use the salesrooms where it was displayed to give him more room for Nash.

President Harry Noyes, of the Noyes-Buick, distributor for Buicks and G. M. C. trucks, has opened some new retail stores in the Greater Boston territory, the last one being at Somerville where he has placed Frank V. Coveney in charge. Mr. Coveney was connected with retail sales in the Commonwealth Avenue building.

W. H. McKinney, leader of the progressive dealers in New Hampshire, with headquarters at Manchester has added Studebaker to his line. He has been handling Pierce Arrow cars for years.

F. H. Kenney, who distributes the Peerless line in Worcester, has just signed a contract to handle the Oldsmobile also.

### EMPLOYMENT GAINS

TOLEDO, Oct. 4.—For several consecutive weeks employment in Toledo plants including the larger automotive institutions has shown a gain and there are now at work about 65 per cent of the peak established in early August last year.

Plants which have been on short time are also increasing hours and many have joined the full-time group.

### SELL ROLLS ROYCE

MILWAUKEE, Wis., Oct. 6.—The Rolls Royce, which about a year ago had a brief representation in the Milwaukee territory, has now been placed with the Sanger-Williams Co., 485 Jefferson Street, Milwaukee, also distributor of the Franklin. The territory embraces practically all of the state of Wisconsin and the Upper Peninsula of Michigan.

### REO ENGINEER ABROAD

LANSING, Mich., Oct. 4.—George W. Kerr, body engineer of the Reo Motor Car Co., has sailed for Europe and will take in both the Paris and London shows while on his trip abroad.

## Members of St. Louis Automobile Dealers Ass'n Hit Used Car Riddle From New Angle

Run Series of Newspaper Advertisements in Campaign Designed to Convince Public it Should Buy From Reputable Dealers

ST. LOUIS, Mo., Oct. 6.—Members of the St. Louis Automobile Dealers' Association, like most, or all, other dealers throughout the country, are constantly harassed by the perplexing "Used Car Problem." Many plans have been advanced for the successful handling of the used car. Almost everything has been tried. Some plans have worked fairly well, others were flat failures.

It is the popular opinion among automobile dealers here that the used car problem is essentially an individual problem. That is, one which every dealer can best solve for himself. Co-operative plans have not worked out any too well.

But the members of the Association realize that while the problem is an individual one there are some steps which may be taken collectively which will have benefits for all and which will be considerably cheaper taken collectively rather than individually. To this end a committee of the Association was appointed by F. C. McDonald, president of the Association. George M. Berry president of the Berry Motor Car Co., Packard distributor in St. Louis, is the chairman of the committee.

### Co-operative Advertising

One plan which the committee deemed feasible and one which it thought would bring results was co-operative advertising. It was decided to try to drive home to the buying public the idea that the best plan in purchasing a used car is

to buy from a reputable automobile dealer. There have been and are in St. Louis, plenty of fly-by-night used car brokers who prey upon the buying public selling poor cars at high prices. So the committee set out to counteract this influence by an advertising plan which would place before the public the ideas of the members of the Automobile Dealers' Association.

It was decided to print a full page advertisement in each of the two Sunday morning papers here alternately for 12 weeks.

The first of these advertisements have been printed and the others will follow each week. There will be ten ads all told.

It was also decided to adopt an emblem to be displayed by automobile dealers and which should be placed upon each used car sold. The emblem proclaims: "This is a Certified Car, sold by a reputable dealer with a reputation to guard, and is guaranteed to be worth every dollar asked for it."

So far the plan has worked out to the entire satisfaction of the dealers and it is hoped that by the time the campaign has run its full way, the public will be educated to the idea that it is better to buy a used car from an automobile dealer with an established business than from a dealer in used cars, who is interested merely in stinging each customer as hard as possible.

## Records Smashed When Italian Hits 81.1 Clip on Monza Track

MILAN, Italy, Sept. 8 (By Mail).—All records were broken when the Italian Mentasti, riding a 500 cc. Guzzi motorcycle, averaged 81.1 miles an hour in the 248.5-mile race for the European championship, held on the Monza track, near this city, yesterday. The same rider covered a lap of the 6-mile track at 84.63 miles an hour, thus creating a new record. Another Guzzi finished second, 11 min. 9 sec. behind the winner. An English Norton was third and Peano on a French Peugeot finished fourth. There were 23 starters, of which nine finished the race. The Guzzi is a new Italian make, with a horizontal single cylinder engine of 88 by 82 mm. bore and stroke, having four valves with an overhead camshaft. The engine base chamber, clutch housing and gearset are one unit, and the machine has single chain drive to the back wheel.

### LATE FLINT APPOINTMENTS

FLINT, Mich., Oct. 6.—T. S. Johnston, general sales manager of the Flint Motor Company, announces the following new dealers: Morris County Motors, Inc., Morristown, N. J.; Hudson Valley Sales Corp., Poughkeepsie, N. Y.; Geo. E. Barlow, Piedmont, Ala.; Lexington Auto Repr. Co., Lexington, N. C.; Speedway Motor Sales Co., Broad St., Lansdale, Pa.; Landy's Motor Co., Mt. Pleasant, Pa.; Monongahela Flint Co., Monongahela City, Pa.; Teel Flint Co., Saratoga, Tex.; Appel & Tisden, Brenham, Tex.; Cleveland Flint Co., Cleveland, Tex.; Brown Flint Co., Conroe, Tex.; Fitchburg Flint Co., Fitchburg, Mass.; Shaw & Shaw, Caribou, Me.; Fairfield Paige & Jewett Co., Fairfield, Me.; Blauchild Motor Car Co., 12100 Kinsman Rd., Cleveland, O.; Middlefield Garage Co., Middlefield, O.; Galion Flint Co., Harding Way N., Galion, O.; S. J. Druckenbrod, North Canton, O.; Schaaf Point Garage, 4631 Broadview Rd., Brooklyn Heights, Cleveland, O.; Harrison Motor Co., Olney, Ill. New Distributors: Cameron Auto Co., Dallas, Tex.; Graben Sharpnack Co., Des Moines, Ia.; Conant-Paggi Co., Houston, Tex.; Wisconsin Flint Co., Milwaukee, Wis.; Earl M. Stapleton, Oklahoma City, Okla.; Inter Mountain Motor Co., Salt Lake City, Utah; Consolidated Motor Co., Memphis, Tenn.

## Production and Sales Policies Not Affected by U. S. Ruling

### Practice of Applying Central Factory Freight Rate Used Since Estab- lishment of Assembly Plants

DETROIT, Oct. 6.—Manufacturers in the industry who are delivering cars from assembly plants and assessing a freight differential upon the delivery price are not affected in their manufacturing or sales policy under the ruling of the Internal Revenue Department recently published.

The policy of applying freight rates as from the central factory has been in effect since the establishment of assembly branches. Profit derived from such freight rates, in reality a profit not represented in the sales price, has been subject to tax return since the application of excise taxes upon the industry dating from 1917, with several changes in the method of application since that time.

The present ruling, "when the amount billed the purchaser in a separate item as freight is in excess of the actual transportation charge but the actual charge is also disclosed in the bill and known to the purchaser, only the amount billed as freight in excess of the actual charge is taxable as part of the sales price;" has been in effect since June, 1923, though publication of it has only recently been made.

The term "purchaser" as used in the ruling means the dealer to whom cars are shipped by the manufacturer. He, the purchaser or dealer, when billed for cars, is billed at the wholesale price, plus the fictitious freight from central manufacturing point to destination, the actual freight from assembly point to destination, and the tax, this latter item being computed on the wholesale price plus the so-called freight differential.

#### Differential Must Be Plain

In this method of billing the actual freight is prepaid by the car manufacturer. In some cases the actual freight may not be prepaid, but under the department ruling it is not essential that the manufacturer prepay the actual freight so long as it is kept separate from the fictitious freight in such way that the differential is easily ascertainable for purposes of taxation. Where the differential is not easily ascertainable the manufacturer may be held liable for tax upon the entire freight item.

Under one of the prior rulings, or previous to the fixing of rulings upon the freight differential tax, manufacturers operating under the assembly plan who to that time had failed to set up as separate items the actual and fictitious freights, were held liable for tax upon the entire freight and close to \$2,000,000

## Villagers Thrilled by First Sight of Motor Car, Feast Driver and Promise Him Medal for Daring

WASHINGTON, Oct. 6.—The thrill of seeing its first automobile was enjoyed recently by the town of Carmen de Apicala in the mountains of Columbia, South America.

A car of a popular American make chugged into the village one afternoon in July after overcoming innumerable highway difficulties.

The authorities of the town went out to meet the automobile with the national flag, and amid the cheers of the people the first machine in history entered Carmen de Apicala.

The owner and driver were feasted in the rectory by the Reverend Padre and the municipal authorities, the ladies of the city showered the owner with flowers, and he was promised a medal for his daring.

A news account in the local paper, reported by Commercial Attache Carlton Jackson to the Automotive Division of the Department of Commerce, stated that "that arrival caused immense rejoicing in this city, as it marks the beginning of an era of progress for all this rich district."

were paid the government by the several manufacturers as back taxes. This represented a complete loss as they had not been collected and could not at that time be collected and led to the definite ruling on the freight differential tax which is now substantiated by the published ruling.

#### Price to Final Buyer

The delivery price of the car to the final buyer thus includes the list price, plus excise tax on the car itself, plus the fictitious freight rate, and plus excise tax on the freight differential, which latter is in reality part of the true list price and subject to tax for that reason. The apportioning of the fictitious freight and the tax on the freight differential per car as part of a car load shipment is usually handled by the dealer and depends upon the number of cars per freight car load. Factory billings of the fictitious freight rate are usually based upon six open cars per freight car load so that each car would bear one-sixth of the billing, both with regard to freight and freight tax. Where the actual freight varies from this six open car per freight car loading, either through loading of closed cars or trucks, or the shipping of more than six open cars through superior loading facilities, accurate record must be maintained to establish clearly the tax liability.

List prices on cars as fixed by manufacturers operating assembly plants, take into consideration the imposing of central point freight rates so that the list price is fictitious as indicating the actual retail car selling price. The profit to the dealer is determinable by his commission with relation to the list, but the profit to the manufacturer is his actual profit on the wholesale price of the car, plus his profit from the freight rate. If retail prices were based exclusively on the cost of production they would necessarily be higher, and if dealer scales of commission remained as now under such a price fixing method, commissions would be higher.

The retail car purchaser under present price fixing pays in additional freight

what he otherwise would pay under a true price fixing method. There is of course no loss to him and manufacturers are benefited to the extent of reduced accounting systems. To the manufacturer and to the government for purposes of taxation, a car is not manufactured until it is turned out completed at one of the assembly branches.

#### Prices Would Vary

If car prices were to be fixed on actual costs they would vary in all parts of the country according to the distance of the assembly plants from the central points. Freight on parts to the assembly plants would vary according to the distance, thereby setting up different costs in each plant, as parts freights under the present system of manufacturing represent manufacturing costs.

Retail buyers therefore are benefited on freight charges to the extent of their proximity to the central plant. The relation of their distance to the assembly plant only is affected by the distance of the assembly plant from the central factory. The same proximity that permits the factory lower freight charges on parts to the assembly plant, would permit shipping finished cars at lower charges from the central point. The variable and fictitious freight charge according to distance, affords the equalization in actual delivery charge at retail which would result if cars were shipped at actual manufactured price from the assembly plant.

#### SHOW COMMITTEE NAMED

BALTIMORE, Md., Oct. 6.—Although the annual automobile show under the auspices of the Baltimore Automobile Trade Association, Inc., will not be held until next January, the association is losing no time in getting plans drawn for the event. The subject has been discussed at several meetings and a committee to have charge of the show has been named. This consists of A. H. Bishop, Joseph R. Manuel, E. T. Backus, E. R. Myers, Thomas G. Young, Daniel Neill, Thomas W. Wilson, Jr., and Louis Fox.



## Los Angeles Volume for Nine Months Far Under 1923 Period

### Comparative Drop Put at 50 Per Cent With Increase Last Days of September

LOS ANGELES, Oct. 6.—Within the last ten days pronounced increase in demand has marked retail sales. Regardless of this change business for September will prove almost 30 per cent less than last year. With many lines the first nine months of this year show a loss of 50 per cent over 1923. Twenty-three dealers are well stocked with cars. Some of them in the outlying districts are declaring storage rental is cutting deeply into prospective profits.

Arrivals from the factories have been so heavy that some of the distributors have resorted to driveaways in order to put the cars in dealers' hands rather than warehouse them.

Locally the closed car demand is growing rapidly, particularly with those lines that do not show much price differences over open models.

The used car market is active but dealers report it seems impossible to reduce their stocks as trade-ins figure in almost every sale.

## Passenger Cars To Occupy 60,000 Sq. Ft. at Texas Fair

DALLAS, Texas, Oct. 4.—All the space allotted for the display of automobiles at the annual show of the Dallas Automobile Dealers' Association to be held in connection with the State Fair of Texas, Oct. 11-26 has been taken. The total display space for passenger cars this year is 60,000 square feet. Accessory dealers also have taken much space.

Dealers declare the show this year will be the most complete ever put on in the Southwest. They have gone to considerable expense in making the exhibit the last word in automotive lines and the manufacturers are heartily co-operating in the move.

The show will be held in the building erected strictly for that purpose. It is expected 1,000,000 will attend the fair this year.

### HAVE LARGER PARTS BRANCH

HARTFORD, Conn., Oct. 4.—The John P. Nielsen & Sons Co., Hartford, Conn., Maxwell and Chrysler distributors, have installed an enlarged parts department in the service station proper and made use of the former location for enlarged executive offices.

### DISTRIBUTE DORT LINE

COLUMBUS, Ohio, Oct. 6.—The Johnson Motor Sales Co. has been established at 781 East Main street, Columbus, Ohio, to distribute the Dort line in central Ohio.

## Brake Test Stations Used By Many

BALTIMORE, Md., Oct. 6.—

Many Maryland motorists make use of the three brake-testing stations which were established by the Maryland State Roads Commission. John W. Mackall, chairman of the State Road Commission, said that as many as 1,000 motorists test their brakes at these stations in a single day. He believes they have been a great help in reducing the number of accidents. The stations are on the Belair road, Annapolis boulevard and Washington boulevard.

## Colorado Dealers Look for Larger Business This Fall

DENVER, Oct. 6.—Colorado dealers are carrying average stocks but look for larger business this fall on account of the increased prosperity in the farming districts. With the largest beet crop in the history of the State, things look favorable for medium priced cars and tractor sales. Building permits in Denver set a new record.

The used car market is in a slump owing to the drop in tourist trade and summer visitors, throwing the visitors' cars on the market at any price. The general outlook is above the average but actual sales have not showed the full benefit of prosperity.

### HANDLE WILLS STE. CLAIRE

MARYSVILLE, Mich., Oct. 4.—Dealers who have recently taken on the Wills Sainte Claire line are: New Rochelle Wills Sainte Claire Co., New Rochelle, N. Y.; Charles Guthy, Incorporated, Jamaica, Long Island, N. Y.; Hewel's Garage, Tyrone, Pa.; State Highway Garage, Gallatin, Pa.; Keith's Garage, Roaring Spring, Pa.

The Beaty & Kennedy Motor Co., Knoxville, Tenn., is a new Wills Sainte Claire distributor.

### NAMED ASSOCIATE DEALER

BALTIMORE, Oct. 6.—The Kaufman Motor Co., Frederick, Md., and C. M. Green & Sons, Kingsville, Md., have been appointed associate dealers in Maxwell and Chrysler cars according to an announcement made by Herbert M. Hartman, president of the Fidelity Motor Co., Baltimore.

### NEW LINCOLN SHOWROOM

BALTIMORE, Oct. 6.—The Backus Motor Co., Baltimore, handling the Ford and Lincoln lines, has opened a showroom at 1121 Cathedral street for the display of Lincoln cars. The new department will be in charge of Hugh Minter.

## September Better in N. Y. But Not Up to Expectations

### Expect Pick-Up to Follow Closed Car Show and Good Trade for Two Months

NEW YORK, Oct. 4.—Looking back over the past month, Metropolitan dealers are agreed that while September was somewhat better in a retail way, that it was not quite so good as expected. This has not been discouraging, however, dealers believing that the buyers held back somewhat in anticipation of the closed car show which opened in the Grand Central Palace last Saturday.

Indications point to a decided pick-up in October following the impetus of the show and there are many who are confidently counting on good business for the next couple of months. Closed car demand is increasing with the approach of winter, while the new models that have been coming out have had a stimulating effect. There are some who declare that demand at the present time exceeds that of the same period last year.

One interesting phase of the situation is the reports from several of the dealers handling high priced cars who state that business is good with them; in fact, better than it has been in a long time.

Not much change is noted in the used car situation but it is the belief that it is not causing so much worry as it formerly did.

## Hupp to Take Advantage of Trade Days at Two Big Shows

NEW YORK, Sept. 22.—Enthusiasm over the trade days at the national shows continues to grow. Neal G. Adair, show manager of the Motor and Accessory Manufacturers' Association, being informed by O. C. Hutchinson, general sales manager of the Hupp Motor Car Co., that his concern has moved forward its luncheons and dinners in order to take advantage of the innovation.

With this end in view, the luncheon to dealers in the New York territory will be held Monday noon, Jan. 5, at New York, while the dealers' dinner at the Chicago show will be held on Tuesday night.

### MOTORISTS ORGANIZE

KOKOMO, Ind., Oct. 6.—Starting with a membership roll of 100, The Kokomo Motor Club has been organized here and officers of the club, which is affiliated with the Hoosier State Automobile Association, predict that the membership will be increased to 500 in a few months. J. E. Fredrick, of this city, president of the Indiana State Chamber of Commerce, is president of the new organization. W. H. Arnett, secretary of the Kokomo Chamber of Commerce, is secretary. The club plans to give immediate attention to the lack of protection for motorists at railroad crossings.

## With the Associations

### Perfect Organization

MILWAUKEE, Oct. 6.—Permanent organization has been effected by the Milwaukee Automotive Service Managers' Association, which is sponsored by the Milwaukee Automotive Dealers' Association. Charles Prinz has been elected president, S. S. Morehouse vice-president, and E. E. Miller treasurer. Bart J. Rudle, executive secretary of the M. A. D. A., was elected the first honorary member and then chosen secretary. Directors are A. J. Ball and A. W. Lass, two years, and S. S. Morehouse and C. M. Nowatney, one year. The president and secretary also serve on the board. The new association intends to affiliate with the national organization. Plans have been completed for the first regular meeting, on Tuesday, Oct. 7, in the form of a dinner business session.

### Form Association

DALLAS, Texas, Oct. 4.—The garage owners of Dallas have formed an organization and probably will affiliate with the Dallas Automotive Trades Association. The new organization is the Ga-

rage Owners' Association of Dallas. M. B. Featherstone is chairman of the association, C. E. Swallow is vice-chairman and E. Y. Holt secretary. With the organization of the garage owners the automotive trades in Dallas is about as thoroughly organized as any city in the country. The tire dealers recently organized, as did the filling station men. The master painters and finishers have been organized for some time and so have the battery men.

### Dealers Hear Jordan

SYRACUSE, Oct. 6.—Edward S. Jordan, president of the Jordan Motor Car Co., speaking at the annual banquet of the Syracuse Automobile Dealers' Association, declared that the most outstanding of all problems of the auto dealer today is that of the second hand car. He pointed out that this problem confronts every phase of the automobile industry and outweighs the problem of disposing of the new car.

The banquet was to celebrate the moving of the association headquarters to the new Hotel Syracuse, where commo-

dious headquarters for the dealers have been provided.

### Tradesmen On Outing

ROCHESTER, N. Y., Oct. 4.—The sixth annual outing of the Rochester Allied Automotive Association was held at Newport, a lakeside resort. More than 300 tradesmen closed their establishments for the afternoon to attend. Sports during the afternoon were followed by a clambake. Harry Frank was chairman of the general committee and Charles S. Owen acted as toastmaster at the clambake.

### Boosters Hold Stag Party

OAKLAND, Cal., Oct. 6.—Members of Automotive Booster Club No. 10 recently held an elaborate stag party at the summer home of Robert W. Martland, general manager of the California Automotive Trades Association. B. H. Kaple was in charge of the entertainment in the absence of A. S. Hicks, chairman of the Booster entertainment committee. The stag marked the first general get-together event of the newly formed Booster Club.

## Coming Motor Events

### Automobile Shows

Atlanta, Ga.	Feb. 2-21, 1925	Annual Southern Automobile Show, Atlanta Auditorium, under auspices of the Atlanta Automobile Association.
Baltimore	Jan. 17-24	Nineteenth Annual Automobile Show, Baltimore Automobile Trade Association.
Birmingham, Ala.	Dec. 1-6	Dixie Automobile Show, Municipal Auditorium, under the auspices of Birmingham Motor Trade Association, G. P. Caldwell, Secy.
Chicago	Jan. 23-31, 1925	National Automobile Chamber of Commerce.
Chicago	Oct. 11-18	Second Annual Closed Car Show, Coliseum, under the auspices of the Chicago Automobile Trade Association. L. L. Fest in charge.
Chicago	Nov. 16-22	First National Transportation Show in American Exposition Building, promoted by Motor Truck Industries, Inc. William Hallanger, Manager.
Chicago	Jan. 26-31	Twentieth Annual Automobile Salon.
Cincinnati	Jan. 10-17	Cincinnati Automobile Show, Music Hall Auditorium, under the auspices of Cincinnati Automobile Dealers Association.
Clarksburg, W. Va.	Oct. 16-18	Clarksburg Automotive Trade Association Closed Car Show, Carmichael Auditorium.
Dallas, Texas	Oct. 11-26	Annual Automobile Show, Fair Grounds, under the auspices of the Dallas Automotive Trades Association.
Detroit	Jan. 17-24, 1925	Detroit Automobile Show, Detroit Dealers' Association.
Kansas City, Mo.	Feb. 7-14, 1925	Kansas City Motor Car Dealers' Association Show.
Newark, N. J.	Jan. 10-17, 1925	Eighteenth Annual Automobile Show under the auspices of the New Jersey Automobile Exhibition Co., Chamber of Commerce Building. Claude E. Holgate, Manager.
New York	Nov. 9-15	Twentieth Annual Automobile Salon. Hotel Commodore.
New York	Jan. 2-10, 1925	National Automobile Chamber of Commerce.
Philadelphia	Jan. 10-17, 1925	Twenty-fourth Annual Automobile Show, Philadelphia Automobile Trade Association, Commercial Museum.
Pittsburgh, Pa.	Jan. 31-Feb. 7, 1925	Twenty-ninth Annual Automobile Show, Motor Square Garden, under the auspices of the Automotive Association, Jno. J. Bell, Manager.

### Foreign Shows

Paris, France	Oct. 2-12	Passenger Car and Accessory Show.
London, England	Oct. 16-25	

### Conventions

Akron, Ohio	Nov. 18-20	Annual Convention of the National Tire Dealers Association.
Atlantic City	Oct. 14-17	Thirteenth Annual Convention National Hardware Association

of the United States, Marlborough-Blenheim Hotel.		
Chicago.....	Nov. 10-15, inclusive	A. E. A. Convention, Coliseum.
Chicago.....	Nov. 10-15	Annual convention and show, Automotive Equipment Association.
Chicago.....	Jan. 26-29, 1925	Eighth Annual Convention, N. A. D. A., Hotel LaSalle.
Cleveland, O.....	Oct. 15-17	Fall convention Motor and Accessory Manufacturers' Association.
Cleveland.....	Nov. 18-19	Joint Service Meeting of the Society of Automotive Engineers and the National Automobile Chamber of Commerce.
Columbus, O.....	Dec. 10-11	Ohio Automotive Trade Association's annual convention.
Detroit.....	Oct. 22-24	S. A. E. Production Meeting and Exhibition.
Detroit.....	January	Annual Meeting of the Society of Automotive Engineers.
Montgomery, Ala.....	Jan. 26, 1925	Annual Convention, Alabama Automotive Trades Association.
New York City.....	Jan. 7, 1925	New York Show, Convention N. A. D. A., Hotel Commodore.
Wilkes-Barre, Pa.....	Oct. 17-18	Fourth Annual Convention of the Pennsylvania Automotive Association, Hotel Stirling.

### Races

Kansas City, Mo.	Oct. 19	Kansas City Speedway Association—250 miles.
Los Angeles, Cal.	Nov. 29	Los Angeles Speedway Association—250 miles.
Monza Track, Italy	Oct. 19	Italian Grand Prix (500-mile race).



# SQUEEKS & RATTLES

The following recently appeared in a newspaper's advertising columns:

"If Wilbur Blank, who deserted his wife and baby twenty years ago, will return, said babe will knock his block off."  
—TIRES.

Papers say Michigan's 354-pound lady bootlegger, recently arrested, seemed worried only about the fate of some pet canaries she was compelled to leave behind. Maybe, though, she will realize some comfort from the jailbirds.

## Prisoner Excused

Boss: "Why didn't you mail that letter, Smithers?"

Smithers (nervously fumbling the letter in his pocket): "Habit, sir—just habit. You see, I thought it was one my wife had given me and I simply can never think to mail her letters."

Drivers of "pedicabs" in China are subject to a fine of \$100 for eating garlic. It is assuming much for an American to tell China what it ought to have in the shape of laws but, at this distance, we elevate ourselves to remark that we have no objection to the practice.

That icy stare the banker gives you sometimes when you hit him for a loan is the original producer of the frozen credit.

They talk about "Hooverizing" the speed maniac. That's all right, but he ought to be paralyzed first.

The custom of changing models every year must have been started in Hollywood.

A cob pipe has been adopted as the Democratic campaign emblem and the Republicans flourish the underslung. Pipe dreams, we surmise, are about to be in season.

## Grand Opera as a Sideline

"Have you any good jacks on hand?"

"This way, please. I'll have one bray for you."

New York State's motor vehicle commissioner in ordering bathing girl posters from windshields takes the practical stand that they interfere with the driver's "vision." But how some men do like to abuse their eyes!

They say what roving horse traders there are left manage somehow to make a living. Swapping automobiles.

"Shakespeare" writes in to pooh-poo the suggestion of having bells on automobiles instead of horns. "Even if arrested for saying it," he chortles, "if those bell fans will listen close they can hear the piston ring."

Horns are all right but some horn users do need attention. With this particular class the question is—if a pedestrian jumps six feet when you honk suddenly in his ear, how much farther would he jump if simultaneously stuck with a pin?

## Safe Enough

Attorney: "As to the charge of stealing the chicken, Rastus, all depends on what that Acts will have to say."

Rastus: "Boss, dat ax ain't goin' to tell no tales. It's done hid."

## SERVICE AT SOAPY'S

## Free Air a Specialty



# Prices and Weights of Current Passenger Car Models

Ship.	Wt. Pass.	Body Style	Price	Ship.	Wt. Pass.	Body Style	Price	Ship.	Wt. Pass.	Body Style	Price	Ship.	Wt. Pass.	Body Style	Price
<b>AMERICAN</b>		<b>"D-66"</b>		<b>CASE</b>		<b>J. I. C.</b>		<b>2755</b>	2-p	Bus. Coupe	1,135	<b>GRAY</b>		<b>"O"</b>	
2985	2-p	Roadster	\$1,950	3260	3-p	Roadster	\$1,840	2929	4-p	Spec. Coupe	1,475	1755	5-p	Touring	\$630
3175	4-p	Sp. Roadster	2,050	3290	5-p	Touring	1,885	3050	5-p	Sedan B	1,250	1735	2-p	Coupe	750
3260	5-p	Touring	1,695	-----	5-p	Spec. Touring	2,160	-----	5-p	Spec. "B" Sedan	1,350	2030	5-p	Sedan	895
3300	5-p	Sport	1,850	3570	4-p	Sub. Coupe	2,480	3098	5-p	Sedan A	1,385	<b>H C S</b>		<b>"4"</b>	
3310	7-p	Touring	1,760	3640	5-p	Sedan	2,590	3190	5-p	Spec. "A" Sedan	1,485	3360	4-p	Touring	\$2,250
3310	7-p	Touring	1,760	-----	5-p	Spec. "X"	-----	<b>DORT</b>		<b>"27"</b>		3750	4-p	Touring	\$2,650
3190	4-p	Sp. Touring	1,885	3020	3-p	Roadster	\$1,670	2595	5-p	Touring	\$1,095	3950	4-p	Coupe	3,350
3470	7-p	Sedan	2,550	3050	5-p	Touring	1,695	3010	5-p	Sp. Touring	1,245	4010	4-p	Sedan	3,350
3310	5-p	Brougham	2,195	3380	5-p	Sub. Coupe	2,390	3030	5-p	Bres. Coupe	1,385	<b>HATFIELD</b>		<b>"6-55"</b>	
<b>ANDERSON</b>		<b>"41"</b>		3400	5-p	Sedan	2,485	3045	5-p	Sedan	1,595	3080	4-p	Sport Touring	\$1,775
2650	5-p	Touring	\$1,195	-----	5-p	Spec. "Y"	-----	3080	5-p	Brougham	1,535	3225	4-p	Coupe	2,175
2675	4-p	Sp. Touring	1,445	3975	7-p	Touring	\$2,475	<b>DUESENBERG</b>		<b>St. "3"</b>		3300	5-p	Sedan	2,350
2925	2-p	Coupe	1,425	4320	7-p	Sedan	3,325	3600	2-p	Roadster	\$6,500	<b>HAYNES</b>		<b>"60"</b>	
2875	5-p	Sedan	1,695	<b>CHALMERS</b>		<b>Y</b>		3700	5-p	Phaeton	6,250	3295	5-p	Touring	\$1,600
2925	5-p	Sp. Sedan	1,895	2865	2-p	Roadster	\$1,185	3920	7-p	Phaeton	6,750	3590	5-p	Sedan	2,300
-----	5-p	Sp. Sedan	-----	2950	5-p	Touring	1,185	3980	4-p	Sp. Phaeton	6,500	3560	5-p	Brougham 4 d.	2,200
2975	7-p	Touring	1,595	3095	7-p	Touring	1,295	4000	4-p	Coupe	7,500	<b>HUDSON</b>		<b>"Super Six"</b>	
3200	7-p	Sedan	1,945	3245	5-p	Sp. Touring	1,335	4350	7-p	Sedan	7,800	3300	4-p	Speedster	\$1,400
<b>APPERSON</b>		<b>"6"</b>		3620	7-p	Sedan	2,095	<b>DU PONT</b>		<b>"C"</b>		3425	7-p	Phaeton	1,500
2965	5-p	Sp. Phaeton	\$1,695	<b>CHEVROLET</b>		<b>"Superior"</b>		3300	2-p	Roadster	\$2,090	3585	5-p	Coach	1,500
-----	3-p	Coupe	1,985	1690	2-p	Roadster	\$495	3400	5-p	Touring	2,090	3675	7-p	Sedan	2,250
3400	5-p	Sedan	2,095	1790	5-p	Touring	510	3600	5-p	Touring Sedan	3,050	<b>HUPMOBILE</b>		<b>"R"</b>	
3450	5-p	Sp. Sedan	2,295	1955	5-p	Phaeton DeLuxe	640	3600	5-p	Suburban Sedan	3,050	2595	2-p	Roadster	\$1,225
-----	5-p	Sp. Sedan	-----	2005	4-p	Coupe	725	<b>DURANT</b>		<b>"A-22"</b>		2705	5-p	Touring	1,225
4100	5-p	Phaeton	\$2,485	-----	4-p	Coupe DeLuxe	775	2285	2-p	Roadster	\$1,080	2760	2-p	Coupe	1,450
4315	7-p	Phaeton	2,535	1880	2-p	Utility Coupe	640	2325	5-p	Touring	890	2860	4-p	Coupe	1,595
4250	5-p	Sport Phaeton	2,800	2070	5-p	Sedan	795	2345	5-p	Touring F.W.B.	940	2975	5-p	Sedan	1,800
-----	7-p	Sport Phaeton	2,900	-----	5-p	Sedan DeLuxe	940	2395	5-p	Sp. Touring	1,140	2875	5-p	Club Sedan	1,475
4440	5-p	Sedan	3,485	<b>CHANDLER</b>		<b>SS</b>		2495	5-p	Coupe	1,340	<b>JEWETT</b>		<b>"R"</b>	
4555	7-p	Sedan	3,585	2945	2-p	Roadster	\$1,795	2405	2-p	Business Coupe	1,035	2690	5-p	Touring	1,135
-----	7-p	Sport Sedan	3,850	3130	4-p	Roadster	1,785	2605	5-p	Sedan	1,365	2810	5-p	DeLuxe Touring	1,290
4570	5-p	Sport Sedan	3,750	3160	5-p	Touring	1,585	2770	5-p	Touring Sedan	1,550	-----	3-p	Bus. Coupe	1,310
<b>AUBURN</b>		<b>"6-43"</b>		3218	7-p	Touring	1,735	2550	5-p	Coach	1,185	2880	5-p	Sedan	1,545
2610	5-p	Special Touring	1,395	3250	4-p	Royal Dispatch	1,885	<b>ELCAR</b>		<b>"4-40-41"</b>		3095	5-p	DeLuxe Sedan	1,745
2760	5-p	Sp. Touring	1,465	3380	5-p	Chummy Sedan	2,045	2560	5-p	Touring	\$995	2775	5-p	Brougham	1,385
2900	5-p	English Coach	1,945	-----	5-p	Sedan	2,195	2585	5-p	Demi Sp. Touring	1,095	-----	5-p	Sp. Brougham	1,525
2885	5-p	Sedan	1,795	3600	7-p	Sedan	2,195	2641	5-p	Sportster	1,195	<b>JORDAN</b>		<b>(120 in. W. B.)</b>	
-----	5-p	Sp. Touring	1,895	3480	7-p	Limousine	3,095	2900	5-p	Sedan	1,495	3000	2-p	Playboy Road.	\$1,850
3225	5-p	Sp. Touring	1,895	<b>CHRYSLER</b>				2981	5-p	Sp. Sedan	1,695	3100	5-p	Touring	1,775
3550	5-p	Sedan	2,550	2620	4-p	Roadster	\$1,625	2779	5-p	Brougham 3 d.	1,265	3420	5-p	Brougham 4 d.	2,385
3510	5-p	Brougham	2,395	2570	5-p	Touring	1,395	2829	5-p	Sp. Brough. 3 d.	1,395	3375	4-p	Victoria	2,385
3550	7-p	Sedan	2,550	2600	5-p	Phaeton	1,495	<b>"6-50-51"</b>				3260	4-p	Blueboy Touring	2,095
<b>BARLEY</b>		<b>"6" 6-50</b>		2800	5-p	Sedan	1,725	2600	5-p	Demi Sp. Tour.	\$1,220	3585	5-p	Sedan	2,585
2750	5-p	Touring	\$1,395	2915	5-p	Imperial Sedan	1,995	2690	5-p	Sp. Touring	1,420	<b>Series "A"</b>			
2800	5-p	Sp. Touring	1,495	2855	5-p	Brougham	1,895	2900	5-p	Sedan	1,720	6000	2-p	Playboy Road.	2,575
3100	5-p	Sedan	1,850	<b>CLEVELAND</b>		<b>"43"</b>		2981	5-p	Sp. Sedan	1,920	3340	5-p	Touring	2,575
3150	5-p	Sp. Sedan	2,250	2750	5-p	Touring	1,095	2779	5-p	Brougham	1,490	3635	5-p	Brougham	2,875
<b>BUICK</b>		<b>"Standard"</b>		2810	5-p	Touring De Luxe	1,195	2829	5-p	Sp. Brougham	1,620	3375	4-p	Victoria	2,775
2750	2-p	Roadster	\$1,150	2830	3-p	Coupe	1,295	<b>"6-61"</b>				3525	5-p	Sedan	2,975
2800	2-p	Roadster Encl.	1,190	2870	3-p	Spec. Coupe	1,395	2007	5-p	Touring	\$1,585	<b>KING</b>		<b>(120 in. W. B.)</b>	
2920	5-p	Phaeton	1,175	2930	5-p	Sedan 2-door	1,395	3380	5-p	Sedan	2,245	3428	2-p	Sportster	\$1,895
2970	5-p	Phaeton Encl.	1,250	3040	5-p	Spec. Sedan 4 d.	1,495	3675	5-p	Sp. Sedan	2,395	3428	4-p	Foursome	1,595
-----	2-p	Business Coupe	1,375	<b>COLE MASTER</b>				3380	4-p	Brougham	1,995	3528	5-p	Touring	1,595
3075	4-p	Coupe	1,565	3675	4-p	Volante Tour.	\$2,325	<b>"8-80"</b>				3645	3-p	Coupe	2,200
3185	5-p	Dbl. Service Sedan	1,475	3795	7-p	West. Tour.	2,325	3-p	Roadster	2,315	3875	5-p	Sedan	2,400	
3245	5-p	Regular Sedan	1,665	3675	4-p	Aero-Vol. Tour.	2,475	5-p	Sp. Touring	2,165	3400	5-p	Road King Sedan	1,495	
-----	5-p	Regular Sedan	-----	4055	5-p	Brouette Sedan	3,225	7-p	Sp. Touring	2,265	-----	4-p	Sedanette	1,995	
<b>"Master</b>		<b>(120 in. W. B.)</b>		4000	7-p	Royal Sedan	3,225	<b>ESSEX</b>				3428	2-p	Sportster	\$1,995
3300	2-p	Roadster	\$1,365	4100	7-p	Royal Limousine	3,325	2130	5-p	Touring	\$900	3428	4-p	Foursome	1,795
-----	2-p	Roadster Encl.	1,400	<b>CUNNINGHAM</b>		<b>"V-4"</b>		2305	5-p	Coach	1,000	3528	7-p	Touring	1,795
3455	5-p	Phaeton	1,395	4600	7-p	Touring	\$6,300	<b>FLINT</b>		<b>"55"</b>		3645	3-p	Coupe	2,200
-----	5-p	Phaeton Encl.	1,475	4500	4-p	Sp. Touring	5,800	3095	3-p	Sp. Roadster	\$1,630	3875	5-p	Sedan	2,400
3675	4-p	Coupe	2,125	4700	4-p	Coupe	7,150	3145	5-p	Touring	1,495	3400	5-p	Road King Sedan	1,495
3845	5-p	Sedan	2,225	5000	6-p	Sedan	7,650	3165	5-p	Sp. Touring	2,050	-----	4-p	Sedanette	1,995
-----	5-p	Sedan	-----	<b>DAGMAR</b>		<b>"6-70"</b>		3165	4-p	Sp. Touring	1,795	3428	2-p	Sportster	\$1,995
3470	3-p	Sp. Roadster	\$1,750	3800	4-p	Sp. Touring	\$3,500	3355	4-p	Coupe	2,095	3428	4-p	Foursome	1,795
3605	5-p	Sp. Phaeton	1,800	4200	4-p	Sedan	4,500	3470	4-p	Sedan	2,185	3528	7-p	Touring	1,795
3645	7-p	Phaeton	1,625	<b>DANIELS</b>		<b>"24-38"</b>		-----	5-p	Brougham	2,735	3645	4-p	Coupe	2,400
-----	7-p	Phaeton Encl.	1,700	4150	4-p	Touring	\$6,800	2400	5-p	Touring	1,075	3875	7-p	Sedan	2,625
-----	3-p	Country Club	2,075	4765	7-p	Touring	6,900	-----	5-p	Brougham	1,630	3400	7-p	Road King Sedan	1,795
3940	5-p	Brougham Sedan	2,350	4600	4-p	Sedan	7,600	<b>FORD</b>		<b>Without Starter and Dem. Rims</b>		-----	6-p	Sedanette	2,295
4020	7-p	Sedan	2,425	5200	7-p	Sedan	7,800	1395	2-p	Runabout	\$265	<b>KISSELL</b>		<b>"55"</b>	
-----	7-p	Sedan Limousine	2,525	<b>DAVIS</b>		<b>"90"</b>		1517	5-p	Touring	295	2980	5-p	Phaeton Std.	1,685
-----	7-p	Town Car	2,925	2650	3-p	M. O'War Road.	\$1,495	<b>With Starter and Dem. Rims</b>				3170	5-p	Phaeton DeLuxe	1,885
<b>CADILLAC</b>		<b>"V-63"</b>		2915	4-p	Legionaire Tour.	1,495	1540	2-p	Runabout	\$350	3190	5-p	Tourster	2,085
4190	4-p	Roadster	\$3,085	2750	5-p	Phaeton	1,395	1662	5-p	Touring	380	3530	2-p	Enc. Speedster	2,785
4280	7-p	Touring	3,085	3070	5-p	Sedan	1,895	1772	2-p	Coupe	525	3430	4-p	Coupe	2,585
4200	4-p	Phaeton	3,085	3065	5-p	P-line Sedan	1,995	1950	5-p	Sedan, Fordor	685	3530	5-p	Brougham	2,685
4270	2-p	Coupe	3,875	2700	5-p	Brougham	1,595	1898	5-p	Sedan, Tudor	590	3530	5-p	Sedan	2,385
4370	5-p	Sp. Coupe	3,950	<b>DORRIS</b>		<b>"6-80"</b>		<b>FRANKLIN</b>		<b>"10 C"</b>		3530	5-p	Victoria	2,685
4600	5-p	Sedan	4,400	2835	4-p	Roadster	1,795	2580	5-p	Touring	\$1,950	3530	2-p	Enc. Speedster	2,785
4610	7-p	Sedan	3,585	3020	5-p	Phaeton	1,695	2710	4-p	Coupe	2,750	3130	2-p	Speedster	\$2,185
4480	5-p	DeLuxe Sedan	4,150	3245	5-p	Sedan	2,195	2730	5-p	Sedan	2,850	4070	7-p	Sedan	3,385
4580	5-p	Town Brougham	4,600	3050	5-p	Brougham	1,895	2655	5-p	Demi-Sedan	2,250	4010	7-p	Berline Sedan	3,485
4640	7-p	Limousine	4,600	3215	5-p	Berline Sedan	2,295	2765	5-p	Brougham	2,850	<b>LEXINGTON</b>		<b>"Concord"</b>	
4640	7-p	Imp. Suburban	4,500	<b>DODGE BROTHERS</b>				<b>GARDNER</b>		<b>"Series 5"</b>		-----	5-p	Touring	\$1,495
4560	7-p	DeLuxe Suburban	4,250	4120	4-p	Pasadena Tour.	\$4,150	2520	3-p	Roadster	\$ 945	-----	5-p	Touring (Enc.)	1,595
4880	4-p	Victoria	3,275	4115	7-p	Touring	3,950	2545	3-p						



# Prices and Weights of Current Passenger Car Models

Ship.	Wt. Pass.	Body Style	Price	Ship.	Wt. Pass.	Body Style	Price	Ship.	Wt. Pass.	Body Style	Price	Ship.	Wt. Pass.	Body Style	Price			
LINCOLN				OVERLAND				ROAMER				STUTZ						
4050	2-p	Roadster	\$4,000	2270	2-p	Sp. Roadster	985	RICKENBACKER				3305	5-p	Touring	1,495			
4290	7-p	Touring	4,000	2200	5-p	Touring	875	"C"				3600	4-p	Victoria	2,050			
4215	4-p	Phaeton	4,000	2360	5-p	Sp. Touring	1,015	2815	3-p	Sp. Roadster	\$1,645	3650	5-p	Sedan	2,150			
4380	5-p	Coupe	4,680	2330	2-p	Bus. Coupe	1,045	2880	5-p	Sp. Touring	1,595	Big Six						
4375	4-p	Sedan	4,800	2460	4-p	Coupe	1,065	3050	4-p	Coupe	2,095	3630	7-p	Touring	\$1,875			
4600	5-p	Sedan	4,900	2570	5-p	Coupe	1,175	3160	5-p	Sedan	2,195	3770	5-p	Coupe	2,650			
4660	7-p	Sedan	5,100	2740	5-p	Coach	1,065	"A"				4130	7-p	Sedan	2,785			
4720	7-p	Limousine	5,300	2740	5-p	Sedan	1,250	3325	4-p	Sport Phaeton	2,195	.....	7-p	Berline	2,860			
LOCOMOBILE				PACKARD				"54-E" (118 in. W. B.)				"KLDH"						
"48"				"91" (100 in. wheelbase)				"6-54-E" (118 in. W. B.)				3600				3-p	Roadster	\$2,450
5080	4-p	Sportif Tour.	\$7,400	1769	2-p	Roadster	\$530	3100	2-p	Roadster	\$2,685	3700	3-p	Sp. Roadster	2,765			
5330	7-p	Touring	7,400	1863	5-p	Touring	530	3100	4-p	Tourer	2,485	3950	5-p	Sp. Touring	2,790			
5600	5-p	Victoria Sedan	9,990	1918	5-p	Touring DeLuxe	595	3300	4-p	Sp. Touring	2,750	4100	7-p	Touring	2,640			
5644	7-p	Brougham	9,990	2177	2-p	Coupe	695	.....	7-p	Touring	2,685	4050	5-p	Touring	3,115			
5640	7-p	Tour. Limousine	9,000	2130	5-p	Sedan	850	.....	3-p	Cabriolet	3,285	4200	4-p	Coupe	2,990			
5868	7-p	Encl. Drive Lim.	9,990	2004	5-p	Coupe Sedan	685	"6-54-E" (138 in. W. B.)				4300	4-p	Sp. Coupe	3,250			
6624	7-p	Cabriolet	10,250	"6" (126 in. W. B.)				"4-75-E"				"693-4"						
McFARLAN				3165	4-p	Roadster	\$2,785	4100	5-p	Spec. Sedan	\$4,250	3250	3-p	Roadster	\$2,195			
4600	2-p	Roadster	\$5,400	3320	5-p	Touring	2,585	4200	7-p	Suburban-Sedan	3,950	3350	5-p	Touring	2,195			
4600	4-p	Sport Touring	5,600	3255	4-p	Sp. Touring	2,750	"4-85-E"				3750	5-p	Sedan	2,850			
4700	7-p	Touring	5,700	3400	4-p	Coupe	3,275	3650	4-p	Sport	3,650	"695"						
4900	4-p	Coupe	6,720	3515	5-p	Coupe	3,450	Spec. Speedster				3,785	3900	5-p	Sportster	\$2,850		
5200	4-p	Tour. Sedan	6,720	3565	5-p	Sedan	3,375	ROLLIN				3950	7-p	Touring	2,885			
5200	7-p	Tour. Sedan	6,810	3610	5-p	Sedan Limousine	3,425	2300	5-p	Touring	\$995	4150	5-p	Sedan	3,600			
5200	7-p	Sp. Sedan	6,600	"6" (133 in. W. B.)				2315	3-p	Coupe Roadster	1,195	4350	7-p	Sedan	3,750			
5200	7-p	Sub. Sedan	7,000	3430	7-p	Touring	\$2,785	2485	5-p	Sedan	1,295	4450	7-p	Berline	3,850			
5100	7-p	Limousine	6,900	3690	7-p	Sedan	3,625	.....	5-p	Spec. Coupe	1,395	TEMPLAR						
5200	7-p	Town Car	9,000	3765	7-p	Sedan Limousine	3,675	R & V KNIGHT				3300	4-p	Suburban Tour.	\$2,175			
"Light 6" SV				"8" (136 in. W. B.)				"H"				3300	5-p	Phaeton	1,985			
3700	3-p	Roadster	\$2,600	3880	4-p	Runabout	3,850	3840	4-p	Sp. Roadster	\$2,400	.....	4-p	Brougham	2,650			
3700	5-p	Touring	2,600	3990	5-p	Touring	3,650	3800	5-p	Touring	2,300	VELIE						
3850	4-p	Coupe	3,100	3930	4-p	Sp. Touring	3,800	3850	7-p	Touring	2,375	"56"						
4850	5-p	Sedan	3,100	4125	4-p	Coupe	4,550	4050	5-p	Coupe	3,000	2780	5-p	Touring	\$1,095			
3900	7-p	Sedan	3,200	4200	5-p	Coupe	4,725	4160	5-p	Club Sedan	3,050	3110	5-p	Sedan	1,595			
MARMON				4270	5-p	Sedan	4,650	4165	7-p	Sedan	3,250	.....	5-p	Royal Sedan	1,895			
3470	2-p	Speedster	\$3,295	4275	5-p	Sedan Limousine	4,700	ROLLS ROYCE				2840	5-p	Touring	\$1,225			
3650	4-p	Speedster	3,295	"8" (143 in. W. B.)				Chassis—\$10,895. Prices of complete cars to be obtained from factory, Springfield, Mass.				3083	5-p	Club Phaeton	1,425			
3575	4-p	Phaeton	3,095	4020	7-p	Touring	\$3,850	STANLEY				3340	5-6	Royal Sedan	1,925			
3690	7-p	Phaeton	3,995	4275	7-p	Sedan	4,900	"740"				3100	5-p	Sedan	1,675			
3770	4-p	Coupe	3,585	4350	7-p	Sedan Limousine	4,950	3770	5-p	Phaeton	\$2,750	3083	5-p	Coach Sedan	1,425			
3770	4-p	Coupe	3,585	3677	4-p	Phaeton	\$1,895	3910	7-p	Phaeton	2,750	WESTCOTT						
3970	4-p	Sedan	3,985	3742	7-p	Phaeton	1,895	4075	5-p	Sedan	3,585	3050	5-p	Touring	\$1,690			
4155	7-p	Sedan	3,985	3880	4-p	Phaeton DeLuxe	2,095	4170	7-p	Sedan	3,985	3150	5-p	Spec. Touring	1,840			
4220	7-p	Suburban	4,285	4300	7-p	Sub. Limousine	2,895	STAR				3300	5-p	Brougham 4 d.	2,290			
4100	7-p	Limousine	4,285	3900	5-p	Brougham 4 d.	2,175	1700	2-p	Roadster	\$540	"48"						
4000	7-p	Town Car	4,285	4285	7-p	Sedan DeLuxe	2,770	1790	5-p	Touring	540	3550	7-p	Touring	\$1,990			
MAXWELL				PEERLESS				"6-70"				3650	7-p	Spec. Touring	2,190			
2135	2-p	Roadster	\$885	3050	2-p	Roadster	\$2,350	1800	5-p	Touring FWB	745	"60"						
2230	5-p	Touring	895	3175	5-p	Touring	2,285	1880	5-p	Spec. Touring	795	3300	5-p	Sedan	\$2,190			
2410	5-p	Sp. Touring	1,055	3525	7-p	Touring	2,485	1980	2-p	Coupe	750	WILLS SAINT CLAIR						
2280	2-p	Club Coupe	1,025	3550	5-p	Sedan	2,995	2115	5-p	Sedan	820	"A-68" (121 in. W. B.)						
2480	5-p	Club Sedan	1,095	3700	5-p	Coupe	2,950	2150	5-p	Spec. Sedan	1,090	3240	3-p	Roadster	\$2,575			
2570	5-p	Sedan	1,325	3900	7-p	Sedan	3,295	STEARNS-KNIGHT				3320	5-p	Touring	2,475			
2785	5-p	Trav. Sedan	1,585	"8"—66				"4"				3460	4-p	Coupe	3,275			
MOON				3980	4-p	Tour. Phaeton	\$2,690	3775	4-p	Coupe Roadster	\$1,795	3630	7-p	Sedan	3,475			
Series "A"				4300	5-p	Sedan	3,690	4250	5-p	Sedan	2,095	3670	5-p	Imperial Sedan	3,575			
2400	4-p	Roadster	\$1,450	4355	7-p	Sedan	3,840	3750	4-p	Coupe Brougham	1,895	3500	5-p	Brougham	3,375			
2410	5-p	Sp. Touring	1,395	4430	7-p	Berline	4,090	"6"				3650	5-p	Limousine	3,850			
2625	5-p	Sedan 2 d	1,695	4130	4-p	Victoria Coupe	3,390	3775	5-p	Touring	\$2,395	3600	5-p	Town Car	3,850			
2760	5-p	Sedan 4 d	1,795	PIERCE-ARROW				3850	7-p	Touring	2,495	"B-68" (127 in. W. B.)						
New York				4350	2-p	Runabout	\$5,250	4025	2-p	Coupe	3,395	3265	4-p	Roadster	\$2,875			
2860	5-p	Touring	\$1,595	4590	5-p	Touring	5,250	4275	4-p	Sp. Coupe	3,150	3335	5-p	Traveler	2,975			
2920	4-p	Coupe	2,035	4780	3-p	Coupe	6,800	4275	7-p	Sp. Sedan	3,395	3500	7-p	Phaeton	2,875			
2920	5-p	Sedan	2,045	4830	4-p	Sedan	6,900	3950	5-p	Brougham	3,200	3495	4-p	Coupe	3,675			
3090	5-p	Petite Sedan	2,245	4960	7-p	Sedan	7,000	"Light 6"				3625	5-p	Sedan	3,775			
Metropolitan				4750	4-p	Coupe Sedan	6,900	.....	4-p	Touring	\$1,875	3635	7-p	Sedan	3,800			
2850	5-p	Touring	1,695	4730	6-p	Brougham	6,800	.....	5-p	Touring	1,875	3570	5-p	Brougham 4-D	3,800			
3120	5-p	Sedan	2,135	4850	7-p	Limousine	7,000	.....	4-p	Sport Coupe	2,185	3710	7-p	Limousine	3,990			
3190	5-p	Sp. Sedan	2,245	5060	7-p	Enclosed Lim.	7,000	.....	5-p	Coupe Brougham	2,285	WILLIS-KNIGHT						
London				4780	7-p	French Lim.	7,000	.....	5-p	Sedan	2,475	"64"						
3270	5-p	Sp. Touring	2,095	4732	6-p	Landaulet	7,000	STERLING-KNIGHT				2681	2-p	Roadster	\$1,275			
3590	7-p	Petite Sedan	2,885	"80"				"4"				2768	5-p	Touring	1,295			
NASH				3385	7-p	Phaeton	\$2,895	3775	4-p	Coupe Roadster	\$1,795	3062	3-p	Coupe	1,770			
2960	5-p	Touring	\$1,095	3440	5-p	Sedan	3,895	4250	5-p	Sedan	2,095	3115	5-p	Sedan	1,795			
3120	5-p	Sedan	1,295	3625	7-p	Sedan	3,995	3450	5-p	Sedan	2,800	3111	4-p	Coupe Sedan	1,550			
"Advanced"				3675	7-p	Enc. Dr. Sedan	4,045	3550	7-p	Sedan	3,050	3115	5-p	Coupe Sedan	1,650			
(121 in. W. B.)				3360	4-p	Coupe	.....	3450	4-p	Sp. Brougham	2,750	3167	5-p	Sedan DeLuxe	1,995			
.....	3-p	Roadster	\$1,375	PREMIER				4200	2-p	Roadster	\$8,150	"67"						
3250	5-p	Touring	1,375	3385	7-p	Phaeton	\$2,895	4400	7-p	Touring	7,500	3059	7-p	Touring	1,425			
3540	5-p	Sedan	1,695	3440	5-p	Sedan	3,895	4250	4-p	Sp. Touring	7,750	3431	7-p	Sedan	2,095			
"Advanced"				3625	7-p	Sedan	3,995	4600	4-p	Coupe	9,000	TAXICABS						
(127 in. W. B.)				3675	7-p	Enc. Dr. Sedan	4,045	4600	4-p	Sedan	10,000	Weight	Make and Model	Price				
3370	7-p	Touring	\$1,525	3360	4-p	Coupe	.....	4800	6-p	Sedan	9,675	4100	Checker	\$2,340				
3670	7-p	Sedan	2,290	REO				4800	6-p	Town Brougham	10,175	2200	Driggs	1,950				
3620	4-p	Coupe	2,190	8172	5-p	Sta. Touring	\$1,395	4800	6-p	Vestibule Limou.	9,675	3415	Elcar 4	2,100				
OAKLAND				8325	4-p	Coupe	1,875	4800	7-p	Vestibule Limou.	10,175	3590	Elcar 6	2,450				
2420	3-p	Roadster	\$1,095	8515	5-p	Sedan	1,985	4800	7-p	% Limousine	10,175	3500	Kelsey E	1,925				
2510	3-p	Sp. Roadster	1,195	8695	5-p	Brougham 4 d.	2,235	STUDEBAKER				3900	Pennant	2,895				
2485	5-p	Touring	1,095	REVERE				Standard Six				3850	Premier 4A	2,890				
2550	5-p	Sp. Touring	1,195	3700	2-p	Roadster	\$3,200	2510	3-p	Roadster	\$1,125	3200	Rauch & Lang T	2,350				
2620	3-p	Landau Coupe	1,295	3500	4-p	Speedster	3,200	2650	5-p	Touring	1,145	3672	Reo V	2,185				
2720	4-p	Coupe	1,495	3800	5-p	Touring	3,200	2955	5-p	Coupe	1,495	3675	Traveler	2,600				
2860	5-p	Sedan	1,545	4300	5-p	Sedan	4,000	3030	5-p	Sedan	1,595	.....	White 15A	.....				
2885	5-p	Landau Sedan	1,645	"M"				3065	2-p	Roadster	\$1,450	3300	Willis Knight A	2,250				
OLDSMOBILE				"30"				Special Six				3475	Yellow O-4	2,400				
2145	2-p	Roadster	\$875	"30"				Special Six				3335	Yellow A-2	2,100				

# Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

MAKE AND MODEL		TIRES		ENGINE										Electrical System		Clutch	Gear-set	Universal Joints	REAR AXLE		BRAKES		Steering Gear	Rear Springs
		Wheelbase (Ins.)	Standard Size (Ins.)	Ballon Equipment	Make	Model	Number of Cylinders, Bore and Stroke (Ins.)	Rated Horsepower, N.A.C.C.	Valve Arrangement	Piston Material	Number of Main Crankshaft Bearings	Oiling System	Carburetor Make	Ignition System Make	Generator and Starter Make				Type and Make	Make	Type and Make	Type and Make		
American.....D-66	127	33x4 1/2	No	H-Sp	91	6-3 1/2 x 5	29.40	L	C	3	PS	Str	A-K	G-D	P-B&B	War	M-Har	F-Sal	5.10	E-R	I-R	None	Lav	S-57 1/2
Anderson.....41	115	32x4	Yes*	Cont	7U	6-3 1/2 x 4 1/2	23.44	L	C	4	PC	Zen	Wes	Rem	P-B&B	Dur	F-Thi	3/4 Sal	4.75	E-R	E-T	Mec*	Gem	S-58
Anderson.....50	122	32x4	Yes*	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Zen	Wes	Rem	P-B&B	Dur	F-Thi	3/4 Sal	4.62	E-R	E-T	Mec*	Gem	S-58
Apperson.....6	120	32x4	Yes*	Own	6	6-3 1/2 x 4 1/2	23.44	L	C	3	PS	Str	Rem	Rem	P-Roc	Mec	M-Thi	3/4 Col	5.10	E-R	I-R	Mec*	Own	J-48
Apperson.....8	130	32x5	No	Own	8	6-3 1/2 x 5	33.80	L	C	3	PS	Joh	Rem	Bij	D-Own	Mec	M-Thi	3/4 Col	4.25	E-R	I-R	Mec*	Own	J-48
Auburn.....6-43	114	31x4	Yes*	Cont	7U	6-3 1/2 x 4 1/2	23.44	L	C	4	PC	Str	Rem	Rem	P-B&B	W-G	M-Uni	3/4 Col	4.63	E-R	E-T	Mec*	Jac	S-57
Auburn.....8-63	124	32x6.2	Yes	Lyc	H	8-3 1/2 x 4 1/2	31.25	L	C	6	PC	Str	Rem	Rem	P-B&B	W-G	M-Uni	3/4 Col	4.63	E-R	E-T	Mec*	Jac	S-57
Barley.....6-50	118	32x4	No	Cont	7U	6-3 1/2 x 4 1/2	23.44	L	C	4	PC	Str	Del	Del	P-B&B	Ful	R-M&E	3/4 Col	5.11	E-R	I-R	None	ne	S-56
Buick....."Standard"	114 3/8	31x4.7	Yes	Own	Sta	6-3 1/2 x 4 1/2	21.60	L	C	4	PS	Mar	Del	Del	D-Own	Own	M-Own	3/4 Col	4.90	E-F	I-R	None	Jac	V-48
Buick....."Master"	120	32x5.7	No	Own	6	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Mar	Del	Del	D-Own	Own	M-Own	3/4 Col	4.73	E-F	I-R	None	Jac	V-47 1/2
Cadillac.....V-63	132	33x5	Yes*	Own	63	8-3 1/2 x 5 1/2	31.25	L	C	3	PC	Own	De	De	D-Own	Own	M-Spi	F-Own	4.50	B-F	I-R	Mec	Own	N-54
Case.....X	122	32x4 1/2	Yes*	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Sch	Del	Del	D-Own	Own	R-Sne	3/4 Col	4.90	E-R	I-R	Hyd*	Lav	S-55
Case.....JIC	122	32x4 1/2	Yes*	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Sch	Del	Del	D-Own	Own	R-Sne	3/4 Col	4.90	E-R	I-R	Hyd*	Jac	S-54 1/2
Case.....Y	132	33x5	No	Cont	6T	6-3 1/2 x 5	33.75	L	C	4	PC	Sch	Del	Del	D-Own	Own	R-Sne	3/4 Col	4.45	E-R	I-R	Hyd*	Lav	S-57
Chalmers.....Y	117	32x4	No	Own	6	6-3 1/2 x 4 1/2	25.35	L	A	3	PS	Str	A-L	A-L	P-Mec	War	M-Mec	3/4 Tim	5.13	E-R	I-R	Hyd*	Gem	S-56
Chalmers.....Y	122	33x4 1/2	No	Own	6	6-3 1/2 x 4 1/2	25.35	L	A	3	PS	Str	A-L	A-L	P-Mec	War	M-Mec	3/4 Tim	5.13	E-R	I-R	Hyd*	Gem	S-56
Chandler.....SS	123	33x6.0	Yes	Own	6	6-3 1/2 x 5	29.40	L	C	4	PC	Sen	Bos	Bos	P-B&B	War	M-The	F-Own	4.45	E-R	E-T	Mec*	Own	S-58 1/2
Chevrolet.....Superior	103	30x3 1/2	No	Own	6	4-3 1/2 x 4	21.76	L	C	3	PS	Zen	Rem	Rem	K-Own	Own	M-Own	3/4 Tim	3.77	E-R	I-R	None	Own	Q-28
Chrysler.....Six	112	30x5.7	Yes	Own	43	6-3 1/2 x 4 1/2	21.60	L	A	7	FP	Str	Rem	Rem	D-Own	Own	M-Own	3/4 Tim	4.60	E-F	E-T	Hyd	Jax	S-51 1/2
Cleveland.....43	115 1/2	31x5.2	Yes	Own	311	6-3 1/2 x 4 1/2	23.44	L	C	3	PC	Sch	Bos	Bos	P-B&B	Own	R-Sne	3/4 Tim	4.90	E-R	E-T	Mec*	CAS	S-53
Cole.....Master	127	20x7.3	Yes*	Nort	6T	6-3 1/2 x 4 1/2	39.20	L	A	3	PC	Sch	Del	Del	D-Nor	Nor	M-Spi	F-Col	4.10	E-R	I-R	None	Gem	S-57
Crawford.....6-70	138	33x4 1/2	No	Cont	6T	6-3 1/2 x 4 1/2	31.54	L	C	4	PC	Zen	Wes	Wes	D-Own	Own	M-Spi	3/4 Tim	5.00	E-R	I-R	None	Lav	J-62
Cunningham.....V4	142	33x5	No	Own	V4	8-3 1/2 x 5	45.00	L	C	3	FP	Str	Del	Del	D-Own	Own	R-Sne	F-Tim	4.23	E-R	I-R	None	Own	S-50
Dagmar.....6-70	138	33x5	No	Cont	6T	6-3 1/2 x 5 1/2	31.54	L	C	4	PC	Zen	Wes	Bos	D-B-L	B-L	M-Spi	3/4 Tim	5.00	E-R	I-R	None	Lav	S-50
Daniels.....24-38	138	33x5	Yes*	Own	24-38	8-3 1/2 x 5 1/2	39.20	L	C	3	PC	Zen	Del	Del	P-B&B	Own	M-Spi	F-Tim	4.23	E-R	I-R	None	Gem	S-50
Davis.....90	115	31x4	Yes*	Cont	7U	6-3 1/2 x 4 1/2	23.44	L	C	5	PC	Str	Del	Del	P-B&B	W-G	M-Pet	3/4 Tim	5.10	E-F	I-R	Hyd	Ros	S-52
Davis.....91	118	32x4 1/2	Yes*	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	5	PC	Str	Del	Del	P-B&B	W-G	M-Pet	3/4 Tim	5.10	E-F	I-R	Hyd	Ros	S-52
Dodge Brothers.....116	132	32x4	Yes*	Own	D	4-3 1/2 x 4 1/2	24.03	L	A	3	PS	Ste	N-E	N-E	D-Own	Own	M-Own	3/4 Tim	4.54	E-R	I-R	None	Own	S-55
Dorris.....132	132	32x5	Yes*	Own	6-80	6-4 x 5	38.40	L	C	7	PC	Str	Bos	Bos	D-Own	B-L	R-Spi	3/4 Tim	3.10	E-R	I-R	None	Own	S-60
Dort.....27	115	31x4	Yes*	Fall	T8000	6-3 1/2 x 4 1/2	23.41	L	C	3	PC	Car	Bos	Bos	D-Dil	Own	M-The	3/4 Tim	4.66	E-R	I-R	None	Gem	V-50
Duesenberg Straight.....8	134	33x5	No	Own	8	8-2 1/2 x 5	26.45	L	A	3	PC	Str	Del	Del	P-Own	Own	R-Cl	3/4 Tim	4.90	L-F	E-T	Hyd	Lav	S-59
Dupont.....C	124	32x4 1/2	No	H-Sp	90	6-3 1/2 x 5	29.40	L	C	3	PS	Str	Wes	Wes	D-B-L	B-L	M-Spi	F-Col	4.45	E-R	I-R	None	Jac	S-58
Durant.....A-22	109	31x4	Yes*	Cont	Spec	4-3 1/2 x 4 1/2	24.03	L	A	3	PC	Til	A-L	A-L	P-Own	War	M-Spi	3/4 Ad	4.33	E-R	I-R	Mec*	War	S-50 1/2
Eicar.....6-41	112	31x4	No	Lyc	CF	4-3 1/2 x 5	21.03	L	A	5	PC	Zen	Del	A-L	P-B&B	W-G	M-Mec	3/4 Sal	4.70	E-R	I-R	Mec*	Ros	S-51
Eicar.....6-51	113	31x4	No	Cont	7U	6-3 1/2 x 4 1/2	23.44	L	C	4	PC	Str	A-L	A-L	P-B&B	W-G	M-Mec	3/4 Sal	4.70	E-R	E-T	Mec*	Ros	S-51
Eicar.....6-61	118	32x4	Yes*	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Str	Del	Del	P-B&B	W-G	M-Har	3/4 Sal	4.70	E-R	I-R	Mec*	Ros	S-52
Eicar.....8-80	127	32x6.2	Yes	Lyc	8	8-3 1/2 x 4 1/2	31.25	L	C	5	PS	Str	Bos	Bos	P-B&B	W-G	M-Mec	3/4 Sal	4.71	E-F	I-R	Hyd	Own	S-58
Essex.....6	110 1/2	31x5.2	Yes	Own	6	6-2 1/2 x 4 1/2	17.32	L	A	3	Sp	Sie	Bos	Bos	D-Own	Own	M-Spi	3/4 Tim	5.60	E-R	I-R	None	Own	S-54 1/2
Flint.....40	115	30x5.2	Yes	Cont	40	6-3 1/2 x 4 1/2	23.44	L	C	4	PC	Til	A-L	A-L	P-Own	War	M-Spi	3/4 Ad	4.77	E-F	E-F	Mec	War	S-50
Flint.....55	120	32x4 1/2	Yes*	Cont	Spec	6-3 1/2 x 5	27.34	L	C	7	PC	Str	Del	Del	P-Own	Own	M-Spi	3/4 Ad	4.77	E-R	I-R	Mec*	War	S-54
Ford.....T	100	30x3 1/2	No	Own	T	4-3 1/2 x 4	22.50	L	C	3	Sp	Str	Own	Own	D-Own	Own	M-Own	3/4 Tim	3.63	E-T	L-R	None	Own	O-43 1/2
Franklin.....10 C	115	32x4.9	Yes*	Own	10-C	6-3 1/2 x 4	25.35	L	A	7	PC	Str	A-K	A-K	P-M&E	Own	M-Spi	3/4 Tim	4.73	E-T	E-R	None	Own	E-38
Gardner.....Series 5	112	32x4	Yes*	Lyc	CE	4-3 1/2 x 5	21.76	L	A	5	PC	Zen	Wes	Wes	P-B&B	Mec	M-Pet	3/4 Tim	4.80	E-R	I-R	None	Ros	S-51
Gray.....O	104	30x3 1/2	Yes*	Own	R	4-3 1/2 x 4	21.03	L	C	3	Sp	Sco	Wes	Wes	P-Own	Det	R-Sne	3/4 Tim	3.90	E-R	I-R	None	Own	Q-30
H.C.S.....Series 4	120	32x4 1/2	No	Weid	Spec	4-3 1/2 x 5 1/2	22.50	L	C	3	PS	Str	Del	Del	D-B-L	B-L	M-Spi	3/4 Tim	4.63	E-R	I-R	None	Gem	S-56
H.C.S.....Series 6	126	32x5	Yes*	Own	6	6-3 1/2 x 5	25.35	L	C	3	FP	Str	Del	Del	D-B-L	B-L	M-Spi	3/4 Tim	4.63	E-R	I-R	None	Gem	S-56
Hatfield.....6-55	121	32x4	No	H-Sp	40	6-3 1/2 x 5	25.35	L	C	3	PS	Str	Bos	Bos	P-B&B	Mec	M-Spi	3/4 Col	4.63	E-R	I-R	None	Gem	S-58
Haynes.....60	121	33x5.7	Yes	Own	60	6-3 1/2 x 4 1/2	29.40	L	C	3	PS	Ray	Kin	L-N	D-Own	Dur	M-Thi	3/4 Tim	4.41	E-R	E-T	None	Jac	S-54 1/2
Hudson.....Super 6	127	33x6.2	Yes	Own	6	6-3 1/2 x 5	29.40	L	A	4	Sp	Ste	Bos	Bos	D-Own	Own	M-Spi	F-Tim	4.45	E-R	I-R	None	Gem	S-58
Hupmobile.....Series R	115	32x4	Yes*	Own	R	4-3 1/2 x 5 1/2	16.90	L	C	3	PC	Str	Wes	Wes	D-Lon	Own	R-Own	3/4 Tim						



# Only Lockheed Fully Employs the Hydraulic Principle

The success of Lockheed is in the full acceptance of the physical law of hydraulics.

Power transmission by fluid under pressure, directly acting upon the brake members, applies balanced forces impossible of attainment by any other method.

Any compromise in the application of hydraulic forces is at the expense of brake efficiency.

In other words, to deliver the most nearly equalized braking power to the brakes of a motor car, the power must be transmitted by hydraulic pressure *direct to the brake members*.

It is only in Lockheed Hydraulic Four-Wheel Brakes that the hydraulic principle is thus fully employed.

HYDRAULIC BRAKE COMPANY  
5835 RUSSELL ST. DETROIT, MICH.

# LOCKHEED

## Hydraulic Four Wheel Brakes

# Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

MAKE AND MODEL	Wheelbase (Ins.)	TIRES		ENGINE										Electrical System		Clutch	Gear-set	Universal Joints	REAR AXLE		BRAKES		Steering Gear	Rear Spring
		Standard Size (Ins.)	Ballon Equipment	Make	Model	Number of Cylinders, Bore and Stroke (Ins.)	Rated Horsepower, N.A.C.C.	Valve Arrangement	Piston Material	Number of Main Crankshaft Bearings	Oiling System	Carburetor Make	Ignition System Make	Generator and Starter Make	Type and Make				Make	Type and Make	Gear Ratio	Foot, Type and Location		
Paige.....70	131	33x4 1/2	Yes*	Cont	Spec 70	6-3 1/2 x 5	33.75	L	C	4	PC	Ray Joh	A-K Del	Rem Del	D-Lon D-Own	W-G Own	M-Mec M-Spi	1/2 Tim 4.90	E-R E-F	I-R I-R	None Hyd	Gem Gem	8-61 1/2 8-54 1/2	
Peerless.....66	126	33x5	Yes*	Own	66	8-3 1/2 x 5	33.80	L	C	3	PC	Bal Del	Del Del	D-Own Del	Own Own	M-Spi (M-Spi R-Goo	3/4 Tim 4.90	E-R E-R	I-R I-R	Hyd* Mec*	Gem Own	8-60 8-57 1/2		
Pierce-Arrow....."80"	138	32x5.7	Yes	Own	"80"	6-3 1/2 x 5	29.40	L	C	7	PC	Own Del	Del Del	P-B&B Del	B-L Own	M-Spi M-Blo	1/2 Tim 4.45	I-F E-R	I-R I-R	Mec Mec*	Gem Own	8-56 1/2 8-57 1/2		
Piercer.....11	124	32x4 1/2	No	Own	Kni T6	6-3 1/2 x 4 1/2	29.40	X	C	4	PC	Str Sch	A-L NE	A-L NE	P-B-L D-Own	B-L Own	M-Spi (M-Own R-Own	1/2 Tim 5.40	E-R E-R	I-R I-R	None None	Jac Own	8-61 8-54 1/2	
Reo.....T6	120	32x6	Yes	Own	T6	6-3 1/2 x 5	24.34	G	A	4	PS	Sch	NE NE	NE NE	D-Own D-Own	Own Own	M-Spi (M-Own R-Own	1/2 Tim 4.70	E-R E-R	I-R I-R	None None	Own Own	8-54 1/2 8-55 1/2	
Revere.....M	131	32x4 1/2	Yes*	Mons	4	4-4 1/2 x 6	30.63	H	A	2	PS	Str Bos	Bos Bos	D-B-L D-Own	B-L Own	M-Spi M-Mec	3/4 Tim 3.44	E-R E-F	I-R I-R	None None	Gem Gem	8-58 8-57		
Rickenbacker.....C	117	32x4	Yes*	Own	C	6-3 1/2 x 4 1/2	23.44	L	C	3	PC	Str Bos	Bos Bos	D-Own D-Own	W-G Ful	M-Mec M-Mec	1/2 Tim 4.63	E-F E-F	I-R I-R	Mec Mec*	Gem Own	8-59 8-59 1/2		
Rickenbacker.....A	121 1/2	33x4 1/2	Yes*	Own	A	8-3 x 4 1/2	28.60	L	C	9	PC	Zen Spl	Del Del	Bos Bos	D-Own D-Own	W-G Ful	R-M&E R-M&E	1/2 Tim 4.60	E-R E-R	I-R I-R	Mec Mec*	Jac Own	8-59 8-55 1/2	
Roamer.....4-75-F	125	32x4 1/2	No	Dues	G1	4-4 1/2 x 6	28.90	H	A	3	FP	Str Bos	Bos Bos	D-B-L D-Own	B-L Own	R-M&E R-M&E	3/4 Tim 4.63	E-R E-R	I-R I-R	Mec* Mec*	Jac Own	8-55 1/2 8-55 1/2		
Rollin.....G	112	31x5.2	Yes	Own	G	4-3 1/2 x 4 1/2	16.90	L	A	4	PC	Til Own	Con Dyn	"O" K-Own	Mun Own	R-Sne R-Sne	1/2 Sal 5.10	E-F E-F	I-R I-R	Mec* Mec*	Own Own	8-46 1/2 8-46 1/2		
Rolls-Royce.....40-56	143 1/2	33x5	No	Own	40	6-4 1/2 x 5 1/2	48.60	L	A	7	FP	Own	Con Dyn	"O" K-Own	Mun Own	R-Sne R-Sne	1/2 Sal 5.10	E-F E-F	I-R I-R	Mec* Mec*	Own Own	8-54 1/2 8-54 1/2		
Stanley.....750	130	33x5.7	Yes	Own	750	2-4 x 5	13.00	X	C	2	Non	Non	Bij Non	Non Non	Non Non	Non Non	M-Spi M-Spi	1/2 Tim 4.50	E-R E-R	I-R I-R	None None	Own Own	8-50 8-50 1/2	
Star.....4	102	30x4 9/16	Yes	Cont	Spec	4-3 1/2 x 4 1/2	15.63	L	C	3	PS	Til	A-L A-L	A-L A-L	P-Own D-Own	War M-Spi	R-Chi R-Chi	1/2 Tim 4.87	E-R E-R	I-R I-R	Mec* Hyd*	Own Own	8-49 1/2 8-50 1/2	
Stearns-Knight.....SK14	119	33x4 1/2	No	Own	Kni	1-3 1/2 x 5 1/2	22.50	X	C	4	PC	Sch	A-K A-L	A-L A-L	D-Own D-Own	Own Own	R-Chi R-Chi	1/2 Tim 5.30	E-R E-R	I-R I-R	Hyd* Hyd*	Own Own	8-50 8-50 1/2	
Stearns-Knight.....6	130	33x5	No	Own	Kni	6-3 1/2 x 4 1/2	25.35	X	C	4	PC	Joh	A-K A-L	A-L A-L	D-Own D-Own	Own Own	R-Chi R-Chi	1/2 Tim 5.30	E-R E-R	I-R I-R	Hyd* Hyd*	Own Own	8-50 8-50 1/2	
Sterling-Knight.....125	135	32x4 1/2	Yes*	Own	Kni	6-3 1/2 x 4 1/2	25.35	X	C	7	FP	Str Bos	Bos Bos	D-Ful B-L	Ful B-L	R-Chi R-Chi	1/2 Tim 4.66	E-R E-R	I-R I-R	Mec* None	Ros Ros	8-58 8-57 1/2		
Stevens Duryea.....G	138	33x5 1/2	No	Own	G	6-4 1/2 x 5 1/2	47.25	L	C	4	PC	Str	Wes Bos	Wes Bos	D-Ful B-L	Ful B-L	R-Chi R-Chi	1/2 Tim 3.76	E-R E-R	I-R I-R	None None	Own Own	8-57 1/2 8-57 1/2	
Studebaker.....Sta. Six	113	31x5.2	Yes	Own	EM	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Str	(Wag Rem (Wag Rem (Wag Rem (Wag Rem	P-Own P-Own	Own Own	R-The R-The	1/2 Tim 4.60	E-R E-R	I-R I-R	Hyd* Hyd*	Own Own	8-50 8-50 1/2		
Studebaker.....Spec. Six	120	32x6.2	Yes	Own	EL	6-3 1/2 x 5	29.40	L	C	4	PC	Str	(Wag Rem (Wag Rem (Wag Rem (Wag Rem	P-Own P-Own	Own Own	M-Spi M-Spi	1/2 Tim 4.36	E-R E-R	I-R I-R	Hyd* Hyd*	Own Own	8-56 8-56 1/2		
Studebaker.....Big Six	127	34x7.3	Yes	Own	EK	6-3 1/2 x 5	36.04	L	C	4	PC	Bal	(Wag Rem (Wag Rem (Wag Rem (Wag Rem	P-Own P-Own	Own Own	M-Spi M-Spi	1/2 Tim 3.69	E-R E-R	I-R I-R	Hyd* Hyd*	Own Own	8-56 8-56 1/2		
Stutz.....693-4	120	32x4 1/2	Yes*	Own	691	6-3 1/2 x 5	29.40	I	C	3	PC	Str	Item	Item	P-B&B D-W-G	W-G Own	M-Mec M-Har	1/2 Tim 5.10	E-R E-R	I-R I-R	None None	Gem Gem	8-61 1/2 8-61 1/2	
Stutz.....KLD1	130	32x4 1/2	No	Own	KLDH	4-4 1/2 x 6	30.63	T	C	3	PC	Str	Item	Item	D-W-G D-W-G	W-G Own	M-Mec M-Mec	1/2 Tim 3.75	E-R E-R	I-R I-R	None None	Gem Gem	8-60 8-60 1/2	
Stutz.....695	130	32x4 1/2	Yes*	Own	691	6-3 1/2 x 5	29.40	I	C	3	PC	Str	Item	Item	P-B&B D-W-G	W-G Own	M-Mec M-Mec	1/2 Tim 4.90	E-R E-R	I-R I-R	Hyd* Hyd*	Gem Gem	8-61 1/2 8-61 1/2	
Templar.....122	122	33x4	No	Own		6-3 1/2 x 5	27.34	L	C	PS	T1	Dyn	Dyn	Dyn	P-M&E W-G	R-Sne R-Sne	3/4 Sal 5.10	E-F E-T	I-R I-R	Mec Mec	Ros Ros	8-54 8-54 1/2		
Velie.....61	118	32x5.2	Yes	Own	56	6-3 1/2 x 4 1/2	24.38	I	C	4	FP	Str	Wes Wes	Wes Wes	P-B&B Dur	M-Thi M-Thi	1/2 Tim 5.10	E-F E-F	I-R I-R	Hyd Hyd	Ros Ros	8-55 8-55 1/2		
Westcott.....4	125	32x4 1/2	Yes*	Cont	12X	6-3 1/2 x 5 1/2	29.40	L	A	3	PS	Ray	Del Del	Del Del	P-B&B B-L	M-Pet M-Pet	1/2 Tim 4.45	E-R E-R	I-R I-R	Mec* Mec*	Gem Gem	8-59 8-57 1/2		
Westcott.....4	120	32x4 1/2	Yes*	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Str	Del Del	Del Del	P-B&B W-G	M-Pet M-Pet	1/2 Col 4.90	E-R E-R	I-R I-R	Mec* Mec*	Gem Gem	8-57 1/2 8-57 1/2		
Westcott.....6	120	32x4	Yes*	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Str	Del Del	Del Del	P-M&E W-G	M-Pet M-Pet	1/2 Col 4.63	E-R E-R	I-R I-R	Mec* Mec*	Gem Gem	8-56 8-56 1/2		
Wills Ste. Claire.....A&B6	121 1/2	32x4 1/2	Yes*	Own	A68	8-3 1/2 x 4	33.80	I	C	3	FP	Zen	Del Del	Del Del	P-Own P-Own	Own Own	M-Spi M-Spi	1/2 Tim 4.45	E-R E-R	I-R I-R	None None	Own Own	8-54 1/2 8-54 1/2	
Willys Knight.....64&6	127	32x6 1/2	Yes	Own	B68	8-3 1/2 x 4	33.80	I	C	3	FP	Zen	Del Del	Del Del	P-Own P-Own	Own Own	M-Spi M-Spi	1/2 Tim 4.45	E-R E-R	I-R I-R	None None	Own Own	8-54 1/2 8-54 1/2	
Willys Knight.....114	134	33x4.9	Yes	Own	64	4-3 1/2 x 4 1/2	21.03	X	C	3	PS	Til	A-L A-L	A-L A-L	D-Own D-Own	Own Own	R-Own R-Own	3/4 Tim 4.44	E-R E-R	I-R I-R	None None	Own Own	8-55 8-55 1/2	
TAXICABS																								
Checker.....117	117	33x4 1/2	No	Buda	WTU	4-3 1/2 x 5 1/2	22.50	L	C	3	PC	Zen	Sci	Wes	D-Ful	Ful	Blo	3/4 Col 4.87	E-R E-R	I-R I-R	None None	Jon Jon	8-57 1/2 8-57 1/2	
Driggs.....108 1/2	108 1/2	30x3 1/2	No	Own		4-2 1/2 x 4 1/2	11.03	L	C	PS	Zen	Bos	Bos	Bos	D-Ful	Ful	Spi	3/4 Own 4.74	E-R E-R	I-R I-R	None None	Own Own	8-57 1/2 8-57 1/2	
Elcar.....4	118	33x4 1/2	No	Lyeo	CF	4-3 1/2 x 5	21.03	L	A	5	PC	Car	A-L A-L	A-L A-L	P-B&B Mun	Pet	3/4 Sal 4.75	E-R E-R	I-R I-R	None None	CAS CAS	8-51 8-52		
Elcar.....6	118	33x4 1/2	No	Cont	SR	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Str	Del Del	Del Del	P-B&B W-G	Spi	3/4 Sal 4.75	E-R E-R	I-R I-R	None None	Gem Gem	8-52 8-52 1/2		
Kelsey.....E	112	32x4	No	Lyeo	CH	4-3 1/2 x 5	19.60	L	A	5	PC	Zen	Bos	Bos	P-B&B W-M	M-Spi	3/4 Sal 5.10	E-R E-R	I-R I-R	None None	Lav Lav	8-55 8-55 1/2		
Pennant.....115	115	33x4 1/2	No	Buda	WTU	4-3 1/2 x 5 1/2	22.50	L	B	3	PC	Zen	Bos	Bos	D-Ful	Ful	Blo	3/4 Col 4.87	E-R E-R	I-R I-R	None None	Jon Jon	8-57 1/2 8-57 1/2	
Premier.....4A	118	33x4 1/2	No	Buda	WTU	4-3 1/2 x 5 1/2	22.50	L	B	3	PC	Zen	Bos	Bos	D-Ful	Ful	Blo	3/4 Col 4.70	E-R E-R	I-R I-R	None None	Own Own	8-57 1/2 8-57 1/2	
Rauch & Lang.....T	112	32x4	No	Buda	WTU	4-3 1/2 x 5 1/2	22.50	L	B	3	PC	Zen	Bos	Dynf	P-Det	Det	Spi	1/2 Sta 5.10	E-R E-R	E-T E-T	None None	Gem Gem	8-50 1/2 8-50 1/2	
Rauch & Lang**.....102	102	33x4 1/2	No	Own		Electric								None	None	Own	Own	8.60	E-R E-R	I-R I-R	None None	Own Own	8-55 8-55 1/2	
Reo.....V	113	33x4 1/2	Yes*	Own	T-6	6-3 1/2 x 5	24.30	G	A	4	PS	Sch	N-E N-E	N-E N-E	D-Own D-Own	Own Own	M-Spi M-Spi	1/2 Tim 4.70	E-R E-R	I-R I-R	None None	Own Own	8-55 8-55 1/2	
Traveler.....108 1/2	108 1/2	32x4	No	Buda	WTU	4-3 1/2 x 5 1/2	22.50	L	B	3	PC	Zen	Eis	Eis	B-L	W-M	Spi	Col 4.90	E-R E-R	I-R I-R	None None	Gem Gem	8-57 1/2 8-57 1/2	
White.....15A	119	34x4 1/2	No	Own		4-3 1/2 x 5 1/2	22.50	L	C	Sp	Zen	Opt	Opt	P-Own	Own	Own	Own	1/2 Own 5.12	E-R E-R	I-R I-R	None None	Own Own	8-55 8-55 1/2	
Willys Knight.....A.B.C.	118	32x4 1/2	Yes*	Own	64	4-3 1/2 x 4 1/2	21.03	X	C	3	PS	Til	A-L A-L	A-L A-L	D-Own D-Own	Own Own	Own Own	1/2 Own 5.12	E-R E-R	I-R I-R	None None	Own Own	8-55 8-55 1/2	
Yellow.....0-4	109	32x4 1/2	No	Cont	V7	4-3 1/2 x 5	22.50	L	C	3	PC	Zen	Bos	N-E N-E	D-B-L D-B-L	B-L	Spi	3/4 Tim 4.90	E-R E-R	E-T E-T	None None	Gem Gem	8-56 8-56 1/2	
Yellow.....A-2	109	29x4 1/2	Yes	Cont	V7	4-3 1/2 x 5	22.50	L	C	3	PC	Zen	Bos	N-E N-E	D-B-L D-B-L	B-L	Spi	3/4 Tim 4.90	E-R E-R	E-T E-T	None None	Gem Gem	8-56 8-56 1/2	

## TAXICABS

Checker.....	117	33x4½	No	Buda	WTU	4-3¾x5½	22.50	L	C	3	PC	Zen	Sci	Wes	D-Ful	Ful	Blo	¾-Col	4.87	E-R	I-R	None	Jon	8-57½	
Driggs.....	108½	30x3½	No	Own		4-2½x4½	11.03	L	C		PS	Zen	Bos	Bos	D-Ful	Ful	Spi	¾ Own	4.74	E-R	I-R	None	Own	8-57½	
Elcar.....	4	118	33x4½	No	Lyc	CF	4-3½x5	21.03	L	A	5	PC	Car	A-L	A-L	P-B&B	Mun	Pet	¾ Sal	4.75	E-R	I-R	None	CAS	8-51
Elcar.....	6	118	33x4½	No	Cont	SR	6-3¾x4½	27.34	L	C	4	PC	Str	Del	Del	P-B&B	W-G	Spi	¾ Sal	4.75	E-R	I-R	None	Gem	8-52
Kelsey.....	E	112	32x4	No	Lyc	CH	4-3½x5	19.60	L	A	5	PC	Zen	Bos	Bos	P-B&B	W-M	M-Spi	¾ Sal	5.10	E-R	I-R	None	Lav	8-55
Pennant.....		115	33x4½	No	Buda	WTU	4-3¾x5½	22.50	L	B	3	PC	Zen	Bos	Bos	D-Ful	Ful	Blo	¾ Col	4.87	E-R	I-R	None	Jon	8-57½
Pennant.....	4A	118	33x4½	No	Buda	WTU	4-3¾x5½	22.50	L	B	3	PC	Zen	Bos	Bos	D-Ful	Ful	Blo	¾ Col	4.70	E-R	I-R	None	Ros	8-57½
Rauch & Lang.....	T	112	32x4	No	Buda	WTU	4-3¾x5½	22.50	L	B	3	PC	Zen	Bos	Dyn	P-Det	Det	Spi	½ Sta	5.10	E-R	E-T	None	Gem	8-59½
Rauch & Lang**.....		102	33x4½	No	Own		Electric								None	None	None	Own	8.60			None	None	8-54	
Reo.....	V	113	33x4½	Yes*	Own	T-6	6-3½x5	24.30	G	A	4	PS	Sch	N-E	N-E	D-Own	Own	Own	½ Own	4.70	E-R	I-R	None	Own	8-55
Traveler.....		108½	32x4	No	Buda	WTU	4-3¾x5½	22.50	L	B	3	PC	Zen	Eis	Eis	B-L	W-M	Spi	Col	.....	E-R	I-R	None	Gem	8-57½
White.....	15A	119	34x4½	No	Own		4-3¾x5½	22.50	L	C		Sp	Zen	Opt	Opt	P-Own	Own	Own	½ Own	5.12	E-R	I-R	None	Own	8-55
Willys Knight.....	A.B.C.	118	32x4½	Yes*	Own	64	4-3¾x4½	21.03	X	C	3	PS	Til	A-L	A-L	D-Own	Own	Own	¾ Own		E-R	I-R	None	Own	8-55
Yellow.....	O-4	109	32x4½	No	Cont	V7	4-3¾x5	22.50	L	C	3	PC	Zen	Bos	N-E	D-B-L	B-L	Spi	¾ Tim	4.90	E-R	E-T	None	Gem	8-56
Yellow.....	A-2	109	29x4½	Yes	Cont	V7	4-3¾x5	22.50	L	C	3	PC	Zen	Bos	N-E	D-B-L	B-L	Spi	¾ Tim	4.90	E-R	E-T	None	Gem	8-56

### ABBREVIATIONS—

\*—Electric  
 †—Generator only  
 \*—At extra cost  
 †—On Phaeton models  
 A—Aluminum  
 Anst—Ansted  
 Ad—Adams  
 A-K—Atwater-Kent  
 A-L—Auto-Lite  
 B—Bentley  
 B&B—Ball & Ball  
 B & H—Borg & Beck  
 B-F—Both Internal and External Four Wheels  
 B-J—Blair  
 B-L—Brown-Lipe  
 B—Blood  
 Bos—Bosch  
 C—Cast Iron  
 Car—Carter  
 C-H—Climax  
 Col—Columbia  
 Con—Connecticut  
 Cont—Continental

D—Multiple Disk  
 Del—Delco  
 De J—De Jon  
 Dit—Ditwiler  
 Doo—Dooley  
 Dtl—Detlaff  
 Dues—Duesenberg  
 Dur—Durston  
 Dyn—Dyneto  
 E—Full Elliptic  
 E-F—External Four Wheels  
 E-R—External Rear Wheels  
 E-T—External Transmission  
 Eat—Eaton  
 F—Full Floating  
 Fall—Falls  
 Fil—Fint  
 FP—Full Pressure to all bearings including wrist pins  
 Ful—Fuller  
 1/2 F—Semi-Floating  
 3/4 F—Three-Quarter Floating  
 G—Head and Side  
 G-D—Gray & Davis  
 Gem—Gemmer

G-L—Grant-Lees  
 Goo—Goodrich  
 H—Horizontal  
 Har—Hart  
 Hol—Holley  
 Hoo—Hoosier  
 H-Sp—Herschell-Spillman  
 Hyd—Hydraulic  
 I—In Head  
 I-F—Internal Four Wheels  
 I-R—Internal Rear Wheels  
 J—Three-Quarter Elliptic  
 Jac—Jacox  
 Jax—Jaxon  
 Joh—Johnson  
 Jon—Jones  
 K—Kone  
 Kin—Kingston  
 L—L Head  
 Lav—Lavine  
 Lon—Long  
 L-N—Leece-Neville  
 Lyc—Lycoming  
 Mar—Marvel  
 M—Merrill  
 M & E—Merchant & Evans

Mec—Mechanics  
 Mon—Monson  
 Mun—Muncie  
 N—Platform  
 Non—None  
 N.E.—North East  
 Nor—Northway  
 O—Special Type  
 Opt—Optional  
 P—Single Plate  
 PC—Pressure to all Crankshaft and connecting rod bearings  
 Pen—Penfield  
 Pet—Peters  
 Pic—Pick  
 PS—Splash with Pressure  
 Q—Quarter Elliptic  
 R—Rohrer  
 Ray—Rayfield  
 Rem—Remy  
 Roe—Rockford  
 Ros—Rosa  
 S—Semi Elliptic  
 Sal—Salisbury  
 Sch—Schebler  
 Sci—Scintilla

Seo—Scoe  
 Sne—Snead  
 Sp—Circulating Splash  
 Spe—Special  
 Spi—Spicer  
 Spl—Splittorf  
 S.E.—Standard Equipment  
 Sta—Standard  
 Ste—Stewart  
 Str—Stramberg  
 T—T Head  
 The—Thermoid  
 Thi—Thiemoer  
 Til—Tillotson  
 Tim—Timken  
 Uni—Universal  
 V—Cantilever  
 W-G—Warner Gear  
 W-M—Willis-Morrow  
 Wag—Wagner  
 War—Warner  
 Weld—Weldely  
 Wes—Westinghouse  
 Wis—Wisconsin  
 X—Sleeve  
 Zen—Zenith





*Dealers—If the Oldsmobile franchise in your territory is open—get in touch with us at once.*

**\$1065**

*f. o. b. Factory*

# OLDSMOBILE

*Announces the*

## Fisher-Built Coach



A new Oldsmobile Coach—with "Body by Fisher"! A creation that embodies everything for which the name Fisher stands! Velour upholstered—and roomy and comfortable for five passengers! Big 33-inch doors give wide entrance space—the new patented one-piece windshield provides better ventilation and full driving vision. And underneath this splendid coach body, with its Duco Satin finish, is the famous tried and proved Oldsmobile Six Chassis. Only the body-building skill of Fisher, the unlimited resources of General Motors and the great manufacturing facilities of Oldsmobile could produce such a coach at \$1065.

Roadster \$875, Touring Car \$875, Sport Roadster \$985, Sport Touring \$1015, 2 pass. Coupe \$1045, Coach \$1065, 4 Passenger Coupe \$1175, Sedan \$1250, DeLuxe Sedan \$1350. The G. M. A. C. extended payment plan makes buying easy. All prices f. o. b. Lansing. Tax and spare tire additional.

OLDS MOTOR WORKS, LANSING, MICHIGAN  
OLDS MOTOR WORKS OF CANADA, LTD, OSHAWA, ONTARIO

*The Refined*

# OLDSMOBILE

# SIX

PRODUCT OF GENERAL MOTORS

# You can lead a horse to water - - -

The rest of that story you know.

But just talk motor re-conditioning to the car owner who is driving around a worn, pepless motor.



Tell him how a re-conditioning job and McQuay-Norris parts will bring back that lost power and pep. Then you'll see some action that means real profits to you.

With the new low prices on McQuay-Norris Leak-Proof and Superoyl rings you can make a price that's easy to sell. And when you start ringing up profits you'll have to change oil oftener in the old cash register.



## McQUAY-NORRIS

PISTON RINGS - PISTONS - PINS - BEARINGS

### Remember

The best profits are in the best parts. Poor replacement parts can ruin a good mechanical job.



# Opens and Shuts Itself!



*Any Motor Will Run Better With A*  
**PINES AUTOMATIC**

## **WINTERFRONT** TRADE MARK REG. U.S. PAT. OFF. **Has no motor connection**

The reason that Winterfront is positive in operation under all driving conditions is because it is not connected with the motor—

- Winterfront is operated by the changing temperature of the water in the upper part of the circulating system
- when the water at this point gets hot enough so that the motor is at highest efficiency, the shutters gradually open, allowing enough cold air to circulate around the motor to keep it at that temperature.

In other words, the motor itself decides how much cold air shall circulate around it.

## **make these easy profits**

Winterfront sells well and makes friends for you, because—

- it holds the heat under the hood so that the car starts quicker, with less backfire and waste of oil
- it brings the motor to efficient operating temperature quicker and holds it there continuously under all driving conditions
- the metal shutters open and close automatically under control of the temperature in the cooling system
- it improves the appearance and the operation of any car to which it is attached.

There is a model for every car. Use the coupon and get the name of the distributor in your territory.

### *Prices reduced—get details*

Remember—you can put it on in 10 minutes by simply inserting 4 bolts through the radiator front and there is no servicing expense. The retail price for cars with small radiator is \$22.50; for cars with medium radiator the price is \$25.00; for cars with large radiator the price is \$28.00.

**PINES WINTERFRONT COMPANY**  
414 N. Sacramento Blvd. Chicago, Illinois

*Use it now  
to get  
fall profits*

**PINES WINTERFRONT CO.**  
414 N. Sacramento Blvd., Chicago, Ill.

Gentlemen: Please send us full details on 1924 sales plans as advertised in Motor Age and name of distributor.

Name \_\_\_\_\_

Signed by \_\_\_\_\_

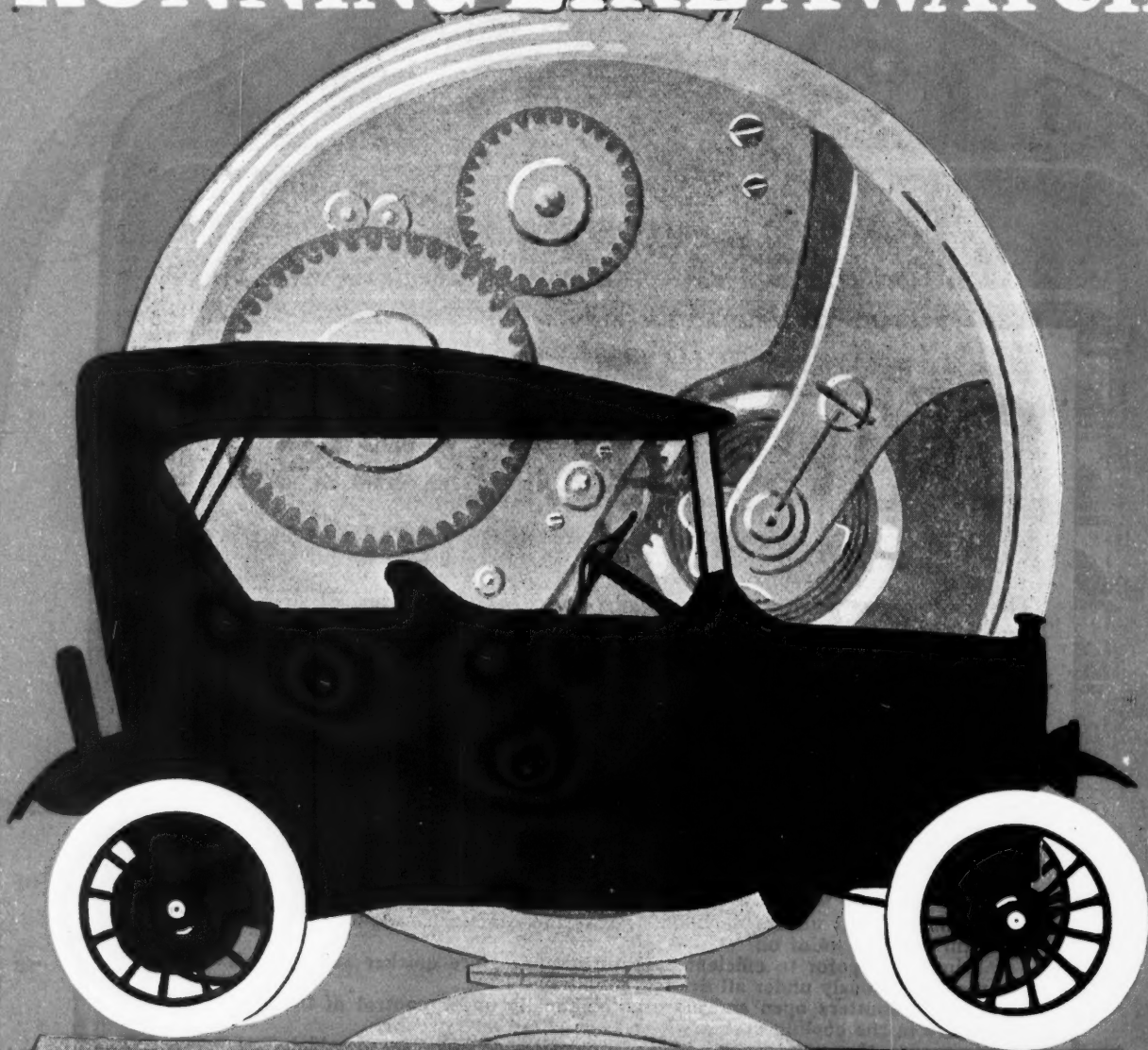
Car we handle \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

**Now**

**KEEPS THE FORD  
RUNNING LIKE A WATCH**



**REXOID**

**TRANSMISSION LINING**

**FOR FORD CARS**

*Like every Thermoid Product -it Wears*



**R**EXOID on the car spells a three-way saving on upkeep.

Rexoid contains 50 per cent. more material than the ordinary transmission lining, and gives at least 50 per cent. longer wear. Saving Number One!

Rexoid is thoroughly impregnated with a proofing compound which is insoluble in oil. Rexoid keeps the oil cleaner. Cuts the oil bill. Saving Number Two!

Clean oil and Rexoid's lasting gripping surface keep the engine running like a watch and save many an overhauling. Saving Number Three!

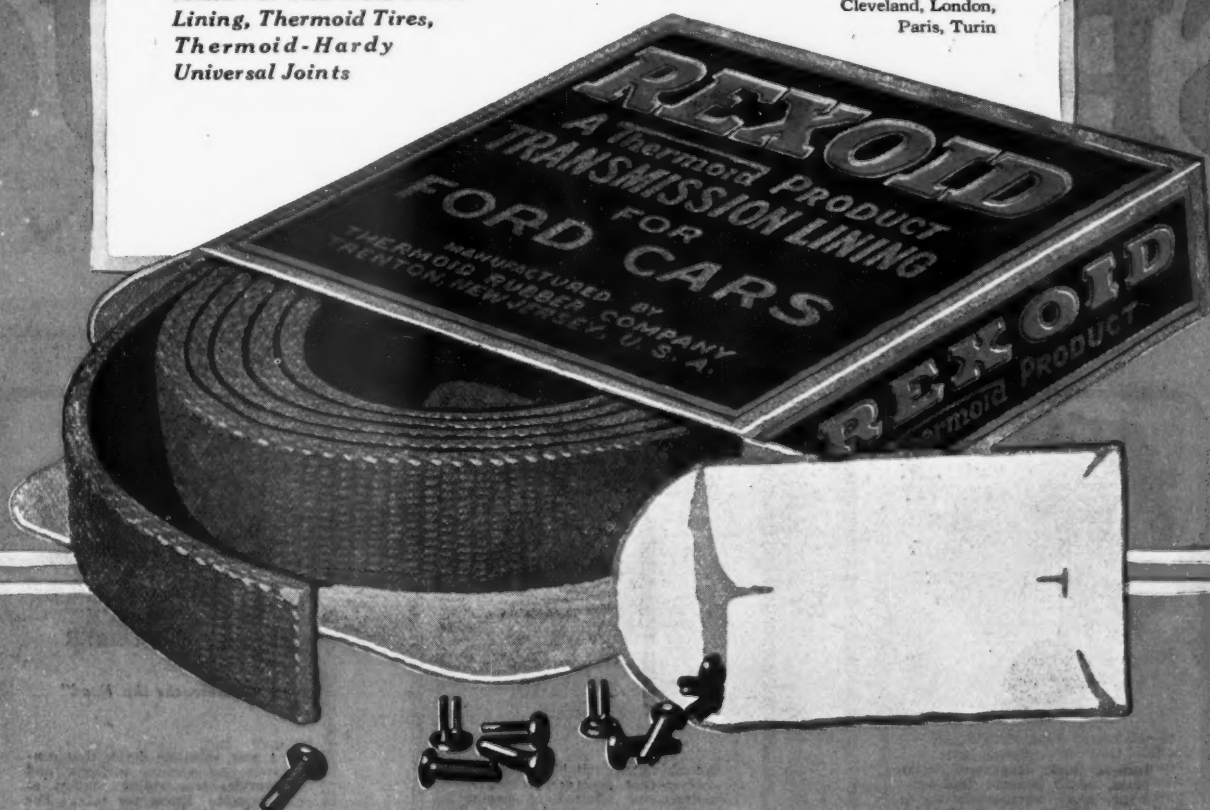
Why *shouldn't* Rexoid be the most widely used lining for renewal jobs?

**THERMOID RUBBER COMPANY, Trenton, N. J.**

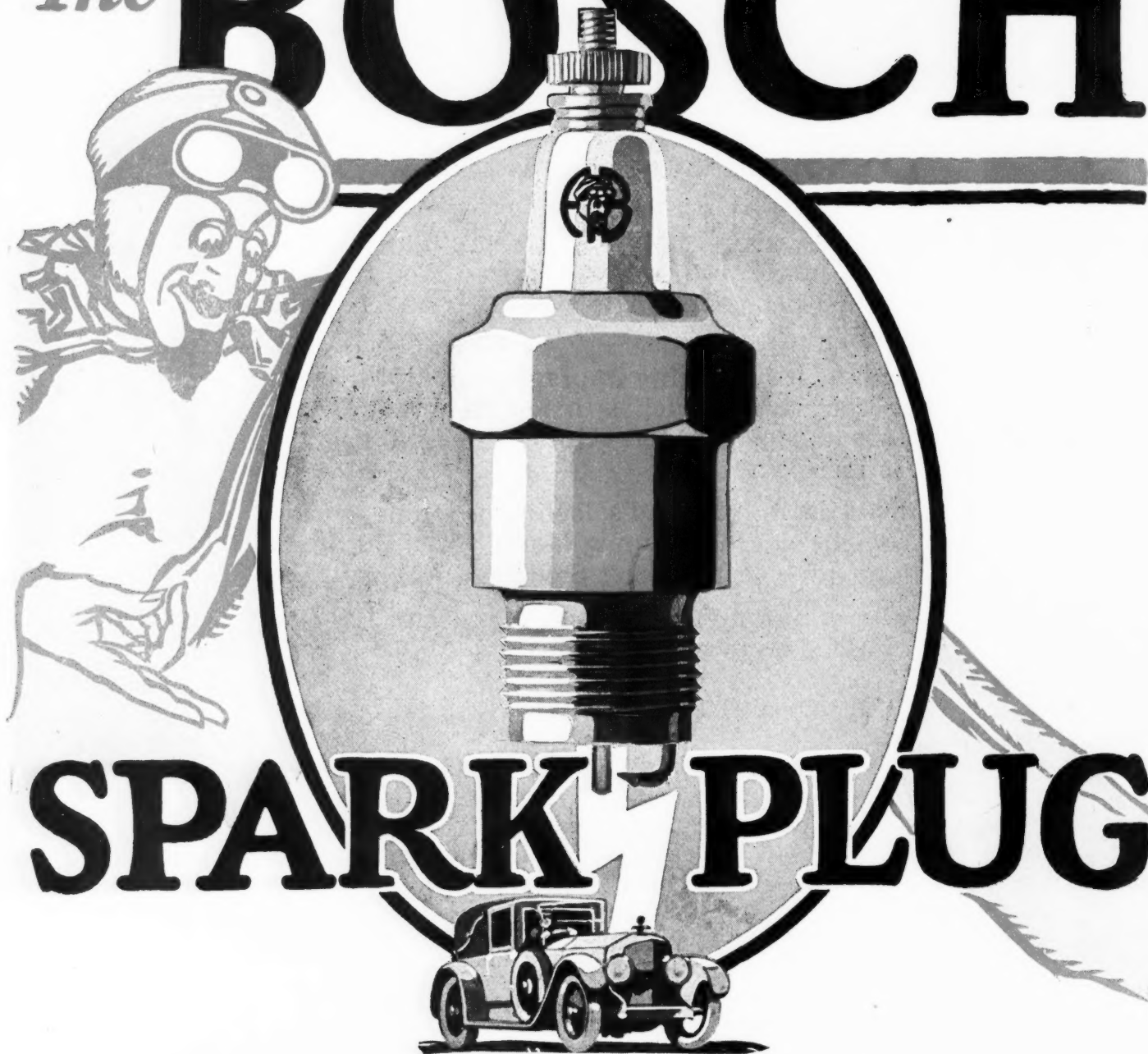
New York, Chicago, Detroit, Atlanta, Kansas City

*Makers of Thermoid Brake  
Lining, Thermoid Tires,  
Thermoid-Hardy  
Universal Joints*

Boston, San Francisco,  
Cleveland, London,  
Paris, Turin



# The BOSCH



## SPARK PLUG



**BOSCH  
IGNITION  
SYSTEM  
FOR  
FORDS  
TYPE  
600**

Insures quick, easy starts, clean plugs, added power. Has automatic spark advance—is waterproof. Prevents all ignition troubles. Price, \$12.75.



**BOSCH  
ELECTRIC  
WINDSHIELD  
WIPER**

An absolutely reliable automatic cleaner that is operated electrically. Not affected by engine speeds. Puts no burden on the battery. Price \$9.50.



**BOSCH  
SHOCK  
ABSORBER**

"Smooths the Road"

▲ new, scientific device that controls car springs perfectly and provides true riding comfort at low cost. Prices per pair: For Fords \$10.00, Medium Cars \$15.00, Heavy Cars \$20.00.



# Long Line

## The Plug With Real Sales Features—



The insulator used in the Bosch RED Spark Plug is made of "Ambosite", a granite-hard substance with wonderful insulating properties.

It is not porcelain or china—there's no clay in it. It is a new chemical composition which intense heat will not crack, and high electric voltage cannot puncture.

The electrodes are long wearing, too. They're made of pure nickel—not steel. They don't burn away like ordinary electrodes. Their crescent shape makes bigger sparks and easy starting.

The plug body and threads are zinc plated—Bosch Plugs won't rust in stock or in reserve.

The Bosch RED Plug is the QUALITY Plug you've been looking for—absolutely gas tight, long lived and dependable under all conditions.

It is backed by the Bosch guarantee and by an enviable reputation it has made for itself. Five types service all popular cars—a small stock gives a quick turnover and a good profit.

### PRICES

<b>Ford Size</b> .....	<b>75c</b>
<i>In Canada</i> .....	<b>\$1.00</b>
<b>Other Sizes</b> .....	<b>\$1.00</b>
<i>In Canada</i> .....	<b>\$1.25</b>

## AMERICAN BOSCH MAGNETO CORPORATION

Main Office and Works: Springfield, Mass.

### BRANCHES

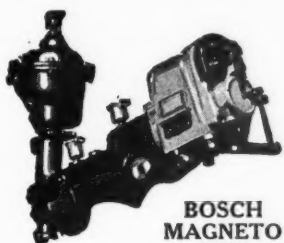
New York

Chicago

Detroit

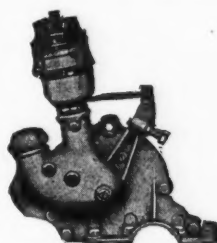
San Francisco

**DEALERS:** Big advantages open to live dealers who can become Bosch Sales Agents and sell the Bosch Long Line of Automotive Necessities



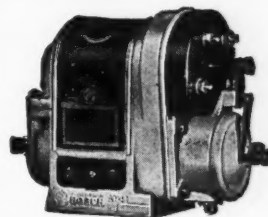
**BOSCH  
MAGNETO  
FOR  
FORDSONS**

Provides Bosch High Tension Magneto Ignition for Fordsons. Eliminates coils and timer. Prevents all ignition troubles. Installed with, or without, the Bosch Throttle Governor. Prices on request.



**BOSCH DE LUXE  
IGNITION SYSTEM  
FOR FORDS  
TYPE 513**

Includes the Bosch Coil, and Bosch Compensating Governor, which automatically advances and retards the spark to exactly meet the Ford engine's characteristics. Wonderfully efficient. Price \$25.00



**BOSCH  
HIGH TENSION  
MAGNETO**

The world's most dependable ignition system—over four million in use today—in demand everywhere for use on cars, trucks, tractors, motorcycles, motor boats and stationary engines. Prices on request.

# These Painted Boards Are Working For You Everywhere—Every Day



## *What Plan Have You to Take Advantage of Advertising*

**T**HE experienced accessory dealer is interested only in nationally known lines of proved quality.

AC Spark Plugs and AC Speedometers are of proved quality—and they are nationally advertised through magazines, painted boards, newspapers and by many other means. This national advertising makes them well known to the public, reduces sales resistance and makes them easy for the

dealer to sell.

Dealers can greatly increase their business by watching AC's advertising, displaying AC merchandise, and by identifying their store more closely with the popularity and prestige of the AC line.

When they do this and follow it up by using the sales thoughts contained in the advertising, they then will get the full benefit of the AC national program.

*Sell AC Products—Their Quality and Popularity Assure Demand and Profit*

AC Spark Plug Company, FLINT, Michigan

AC-SPHINX  
Birmingham  
ENGLAND

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139,  
Feb. 13, 1917. Other Patents Pending

AC-OLEO  
Levallois-Perret  
FRANCE



**The New**

**Stromberg**

**Electrically  
Driven**

**Windshield  
Wiper**

An Automatic  
Windshield Wiper un-  
equaled for efficient serv-  
ice in removing slush, snow,  
rain or mist from the windshield.  
No longer need car owners take  
risks. They may now install the Strom-  
berg and be assured a  
clear vision in stormy

weather—at a touch of the but-  
ton. Because it's electrically  
driven from the battery. Con-  
sumes less current than one head-  
light. Silent, powerful and posi-  
tively continuous under all engine  
speeds, regardless of road or weath-  
er conditions—never fails—never  
disappoints.

**10 Points of Stromberg Superiority**

- 1 Continuous operation at all engine speeds.
- 2 Dependable "sweep" of Wiper Arm due to use of high-speed-series-type electric motor.
- 3 Special patented drive mechanism assures smooth, steady wiping motion.
- 4 "Spring tension" Wiper Arm maintains constant pressure against the glass.
- 5 Silent operation.
- 6 Low current consumption.
- 7 Compact design of Wiper Body permits "close fit" to Windshield Frame.
- 8 Sturdy construction—long life.
- 9 Operates, if desired, when car is "parked".
- 10 Easily installed on all cars. Only two small holes to drill.

**\$9.00**

**Branches:**

New York  
250 W. 57 St.  
Boston  
66 Brookline Ave.

Detroit  
2739 Woodward Ave.  
San Francisco  
Folk and Ellis Sts.

Los Angeles  
1200-4 Grand Ave.  
Portland  
8th and Flanders Sts.

Seattle  
1400 12th Avenue  
London, England  
173-175 Cleveland St., W. I.

**Live Dealers! Increase Your Profits**

Meet the enormous car owner demand for a *dependable* Windshield Wiper with the Stromberg. Easily installed. Individually packed in attractive cartons. Furnished

for 6 or 12 volt battery. Carries the liberal Stromberg Guarantee.

Line up NOW—with this fast-selling necessary accessory. Write our nearest branch, or direct to us. Complete Sales Plan will reach you promptly.



**STROMBERG MOTOR DEVICES CO.**

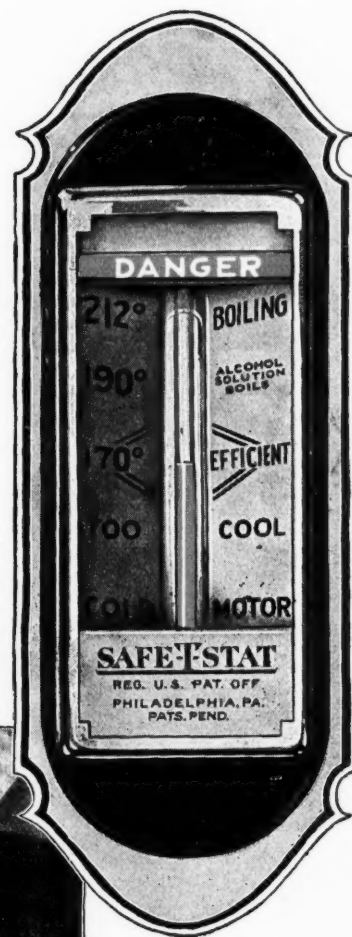
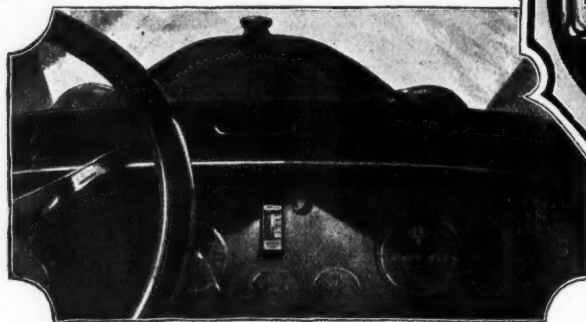
**58-68 East 25<sup>th</sup> Street, Chicago, U.S.A.**

**MANUFACTURERS OF THE STROMBERG CARBURETOR**

## Three Big Points for the Motorist

- 1—**Visible Night and Day.** Safe-T-Stat is mounted where a heat indicator should be—on the instrument board — and consequently is visible night and day and is never obscured by bad weather.
- 2—**Theft-Proof.** Safe-T-Stat is theft-proof and requires no locks.
- 3—**Accurate Under Any Conditions.** Safe-T-Stat takes the temperature direct from the engine and registers accurately regardless of weather or radiator conditions. It is the one device that registers true temperatures of motors cooled by both thermo-syphon and pump systems.

Safe-T-Stat is electrically controlled and must not be confused with heat indicators actuated by vapor, or by fluid or gas pressure systems.



# SAFE-T-STAT

## and ENGINE HEAT INDICATOR Three Big Points for the Dealer

- 1—**One Model Fits All Cars,** and that means that there is only one size to stock. With one price of \$10.00.
- 2—**Easy to Install.** Safe-T-Stat is quickly installed without tapping the motor block and operates indefinitely without adjustment or expense.
- 3—**Dependable in Operation.** There are no come-backs from a Safe-T-Stat installation. It is a simple operation and you can bank on Safe-T-Stat to do its job accurately and faithfully.

At your jobber's or write us direct for the nearest distributing point.

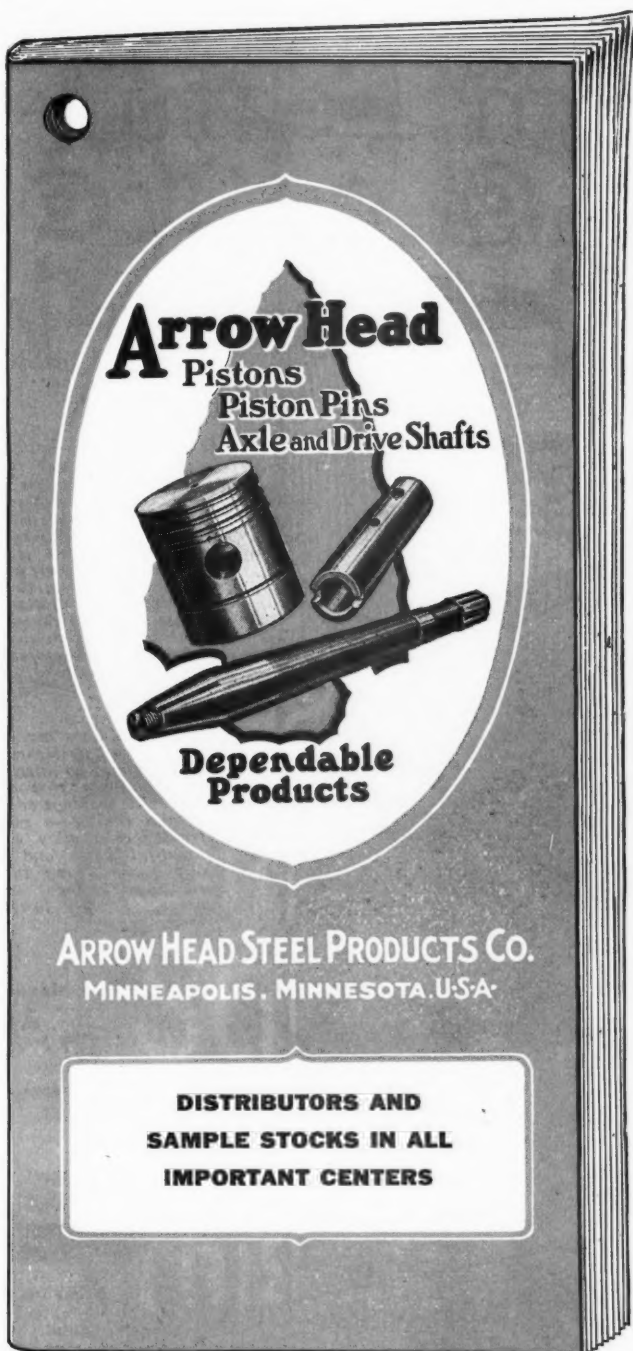
**The SAFE-T-STAT Co., Inc.**

FACTORY  
57th and Westminster Ave.

PHILADELPHIA

GENERAL OFFICES  
Drexel Building





## Profits for Repair Men

Packed into three pages of this new book you will find our recommendations for installing pistons, fitting pins and replacing shafts. These brief suggestions are invaluable, because they represent years of scientific research and experience by this great organization.

*The new booklet outlines 10 opportunities for motor repair men—also our recommendations for rebuilding motors—and complete list of Arrow Head Pistons, Pins and Shafts for cars, trucks, tractors, airplanes, etc. A valuable book—free on request.*

**ARROW HEAD STEEL PRODUCTS COMPANY**  
MINNEAPOLIS, MINNESOTA  
U. S. A.

# Talk Bethlehem Features and Boost Your Sales!



Solid brass locknut prevents theft of Motometer or ornament. Small tongue in flange of locknut indents into space in cover and prevents Motometer turning out of alignment.

Lower gasket inside bottom of cap seals cap on radiator filler neck making it leak-proof.

Hole down through body of cap (in some type this hole goes in through body of cap at back) to take the hollow headed set screw. The screw tightens against filler neck of radiator making absolute locking device. After tightening set screw with small wrench given with cap, a lead ball is driven into head of set screw preventing its being removed.

Bars are not ordinary round or tapered but decagon shaped (10 sided), extra strong and beautifully balanced and finished.

Hinge pins in thumb latch and cover are special alloy for strength and non-rusting. Each hinge is blind on one end so that pins cannot be driven out and parts stolen.

No sleeves or bushings—a solid cap for each car. This advanced design and improvement in Radiator Caps eliminates sleeve troubles—caps turning around, unsatisfactory locking sleeve devices, upper gasket troubles caused when gaskets are supposed to be held by sleeve attachments, and troubles caused by inaccurate fits of die-cast parts.

This tongue fits into thumb latch securely holding down cover to make cap leak-proof. When cap has been in use for time can tighten fit of cover by placing thin shim or piece of paper in groove under rubber gasket. This original design does away with all bushings and sleeves and unnecessary troublesome parts.

Solid rubber upper gasket seals cover when closed. Our design allows this gasket to give service and retains life of rubber—gasket is placed in recess in cover which is cool part of cap, thus preventing deterioration and abuse of gasket caused when gasket depends on sleeves or bushings and is squeezed into hot body of cap.

Bethlehem Caps are die-cast from special Bethlehem alloy—absolutely no steel parts used. Cannot rust or corrode. No bushings or sleeves to give trouble—a solid cap from special alloy allowing beautiful finish and design and extra strong to withstand more than ordinary usage. Retains lustre and finish.

Each cap is plainly numbered and indexed on a special printed directory, making it easy to select the proper cap.

Thumb latch for tightening cover and holding initials or emblem. Graceful, original, beautiful design and mechanically correct—(patents applied). Owner's initial in silver and black finish, or fraternal emblem supplied for each cap.

Prism shaped finish to bottom of skirt of cap instead of plain casting, giving beautiful balance design and finish.

## BETHLEHEM De Luxe Radiator CAPS

THE BETHLEHEM SPARK PLUG COMPANY, Inc., Bethlehem, Pa.  
E. H. SCHWAB, Pres.

BETHLEHEM Wrench Sets

BETHLEHEM Spark Plugs



**Eliminate  
"Stickers"  
with  
This Plan**

**AJAX**  
Red Base  
**JACKS**  
Steel

MODEL 9 BUICK4 FORD  
HUPMOBILE OVERLAND  
DODGE CHEVROLET  
MAXWELL STAR

MODEL 73 HUDSON BUICK  
REO STUDEBAKER  
WILLYS KNIGHT PACKARD

**AJAX**  
Red Base  
**JACKS**  
Steel

*This combination floor and counter displaystand is furnished FREE to dealers with an assorted order for 12 Ajax Red Base Jacks.*

This stand suggests "Buy-a-Jack" to everyone who enters your store. It also answers the motorist's questions as to size, lifting capacity, etc. It keeps every one of the 4 Ajax Jack models moving. You will never again be troubled with slow moving jack stocks if you sell Ajax Red Base Jacks. They multiply your profits by increasing the turnover of your entire stock. Order from your jobber.

*Ajax Red Base Jacks are standard equipment on 22 well-known makes of automobiles.*

**AJAX AUTO PARTS CO.**  
Dept. A510 Racine Wisconsin

**AJAX RED  
BASE JACKS**

Every Tom, Dick and Harry may not handle TITANIC Springs but you won't have to ask the thousands who sell them why they do.

Their prosperous-looking places tell the story. This is it:—

*Quickest Service and  
Highest Quality Always*

Get *your* finger in the pie. It's plenty big enough.

## TITANIC SPRINGS

*Alloy Steel Throughout*



**TUTHILL SPRING CO.**

*Established 1880*

760 W. Polk St., Chicago, Ill.



THE BEST ACCELERATOR FOR FORDS

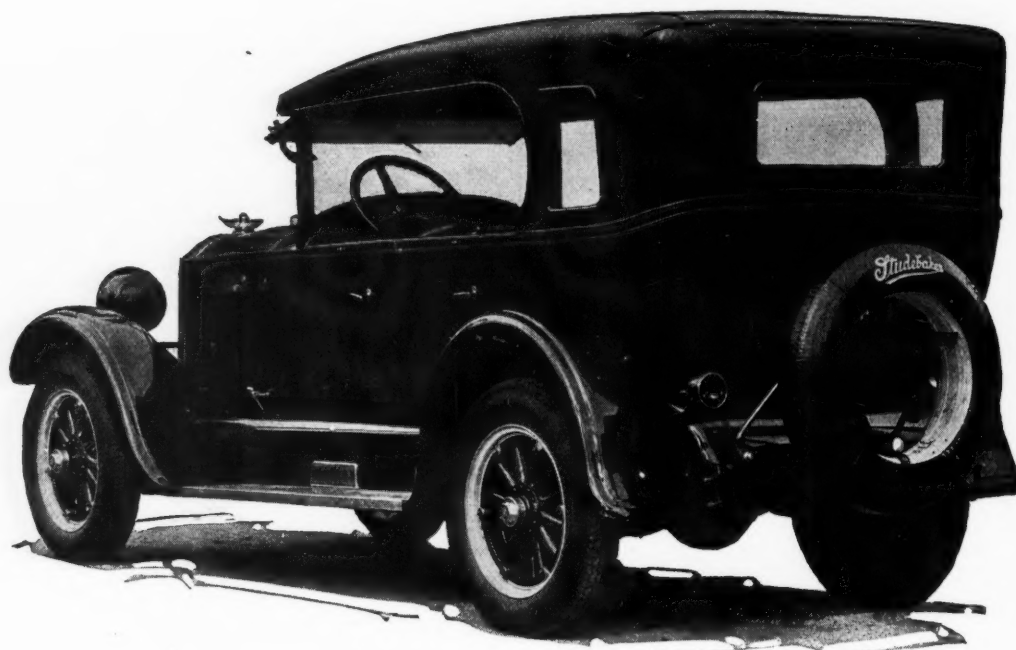
## The Ford Owner Knows

**T**O SAY to the Ford Owner—"We have the Bull Dog" usually means a sale. He knows Bull Dog's reputation as a Foot Accelerator. He knows that it will give him more than his money's worth in service. He is satisfied—and you make a generous profit in good will as well as money. Is it any wonder that leading dealers everywhere are selling more Bull Dogs this year than ever before.

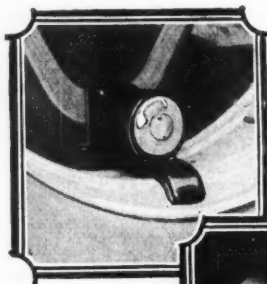
The new Bull Dog Counter Merchandizer is proving a wonderful business getter on the dealer's counter. You may have one FREE. Ask your jobber.

THE W. H. THOMAS MFG. CO.  
SPENCER, IOWA



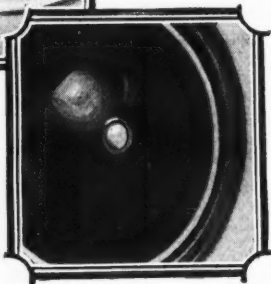


## Every New Studebaker! Has An OAKES LOCK!



*For the  
spare tire—  
The handsome  
Oakes Spare Tire  
Lock provides dis-  
tinctive theft-pro-  
tection.*

*For the  
spare wheel—  
The Oakes Spare  
Wheel Lock with  
Cover Plate con-  
ceals all the pro-  
truding studs.*



LOOK at the beautiful new Studebakers coming into your territory—every one has a handsome, efficient OAKES Spare Tire or Spare Wheel LOCK as standard equipment.

Leading manufacturers of quality cars now include OAKES LOCKS as standard equipment—a steadily growing influence on the many thousands of other car owners who will gladly buy OAKES LOCKS as extra equipment! Types for all cars. Easy to sell. Good profits for you. Write us at once if your jobber cannot supply you.

THE OAKES CO.  INDIANAPOLIS

Established 1910

# OAKES SPARE TIRE AND SPARE WHEEL LOCKS



# ~ Why ~ NOBLE HEATERS

## Sell Quickly!

1. Proved 95% heat efficiency.
2. Heat insulated—heats quickly.
3. Heat can be easily regulated.
4. Odorless—no leaky joints.
5. Noiseless—no extra tail-pipe.
6. No up-keep. It's priced right.
7. Simple. Very easily installed.

## Complete Sales Plan

Backed by this powerful sales campaign our dealers are sure to make quick profits on Noble Heaters and build a nice winter business. Let us tell you how we help you sell.

Don't miss! Our special WINDOW POSTER OFFER---You can save half of the cost on your first heater. Ask about it. Mail the coupon now!

411 No. Indiana Ave.

**The GLADIATOR MFG. CO.**  
AUBURN INDIANA, U. S. A.

**Mail This Coupon Today!**

Gladiator Manufacturing Co.,  
411 No. Indiana Avenue  
AUBURN, INDIANA

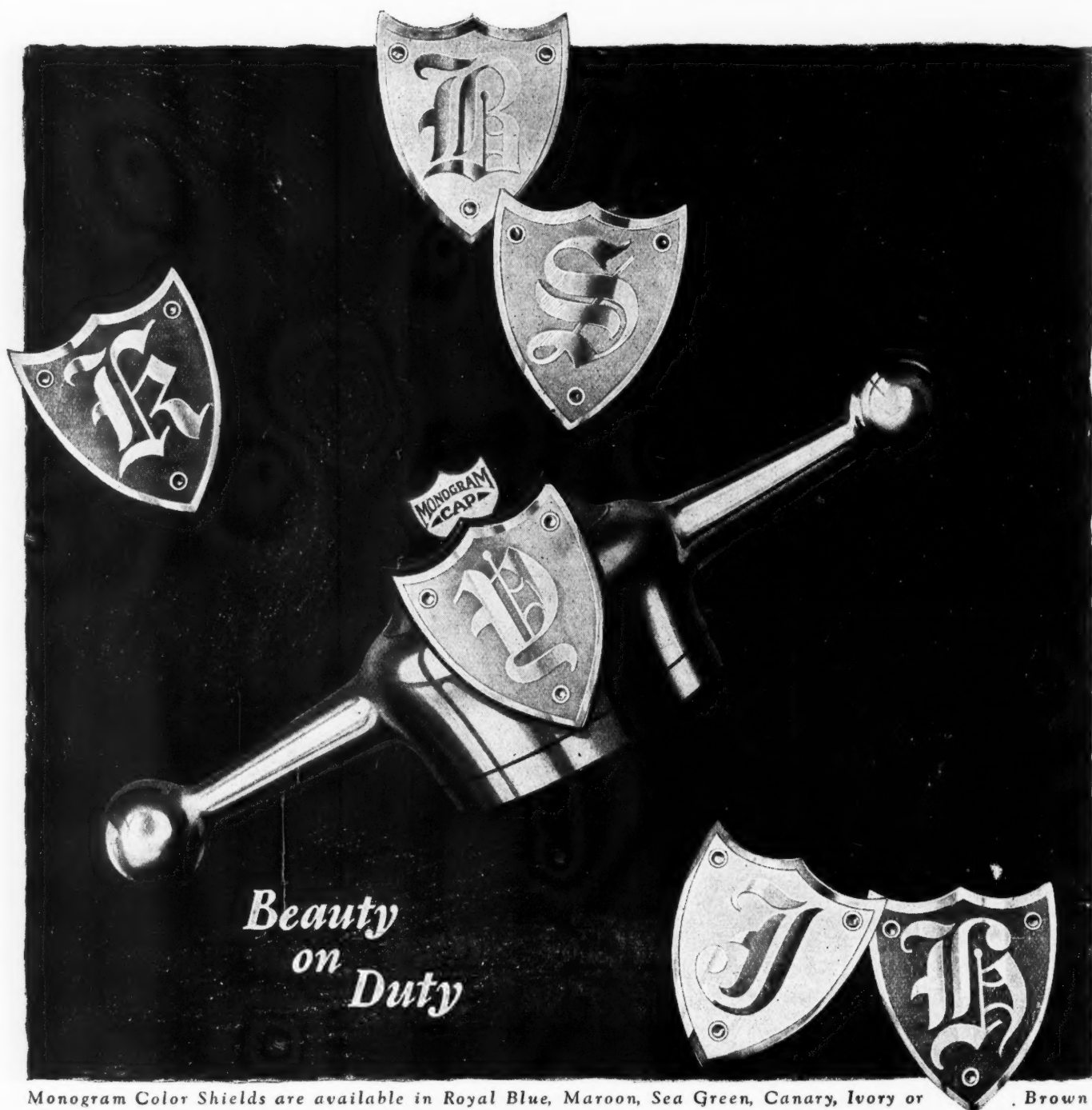
Gentlemen:

Please send me full information and price of Noble Heaters. Also tell me about your new and complete Sales Plan.

Name \_\_\_\_\_

Town \_\_\_\_\_ State \_\_\_\_\_





Monogram Color Shields are available in Royal Blue, Maroon, Sea Green, Canary, Ivory or Brown

## Protection—the Duty of Beauty

Carry **Protection** in stock—protection for the heat indicator, so easily pilfered unless guarded by Monogram Self Locking Radiator Cap.

Carry **Convenience** in stock—the convenience of meter protection without a key. The convenience of the Monogram hinged lid and Instant-Latch.

Carry car **Beauty** in stock—the fine beauty of Monogram graceful proportions, and rich, glistening finish.

And carry in stock the **Personal Appeal** of Monogram initial shields. With each Monogram cap at the regu-

lar price, the car owner selects his initial, artistically wrought in the standard Monogram silvery finish. Or at slight added charge Monogram offers a choice from the exclusive assortment of smart color shields.

Protection, Convenience, Beauty, Personality are combined in few accessories! That is why there are few consistent big sellers like Monogram caps, particularly during the holiday season.

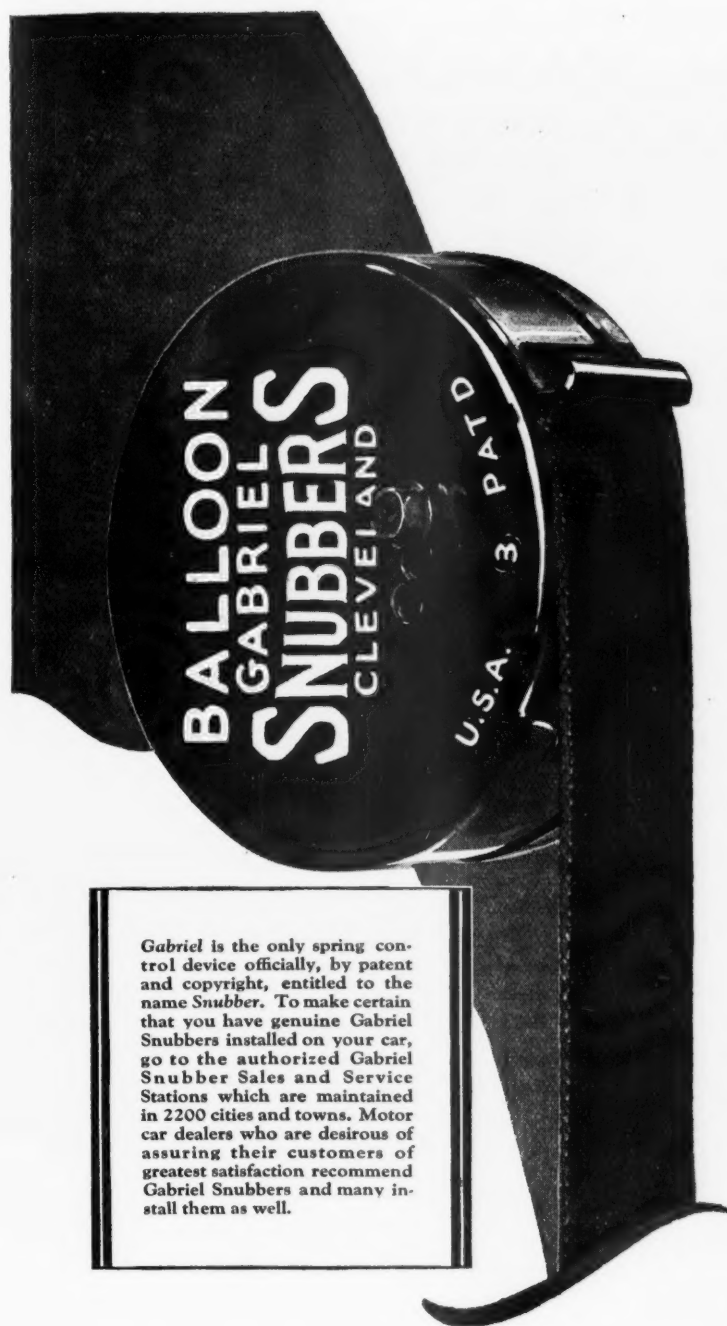
Remember, 15,000,000 motor cars—eight Monogram numbers fit 13,000,000 of them! Your Monogram Distributor can tell you.

# MONOGRAM

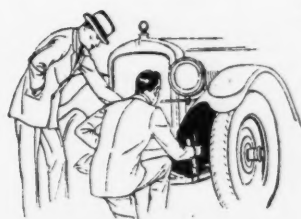
Original Self Locking Radiator Cap

GENERAL AUTOMOTIVE CORPORATION, 600 West Jackson Blvd., Chicago





Gabriel is the only spring control device officially, by patent and copyright, entitled to the name *Snubber*. To make certain that you have genuine Gabriel Snubbers installed on your car, go to the authorized Gabriel Snubber Sales and Service Stations which are maintained in 2200 cities and towns. Motor car dealers who are desirous of assuring their customers of greatest satisfaction recommend Gabriel Snubbers and many install them as well.



## Full Riding Comfort

All who have tried them agree that Gabriel Balloon-Type Snubbers are necessary with balloon and low-pressure tires, in order to get all the riding comfort such tires are designed to give.

Full page advertisements in national mediums, are featuring Gabriel Balloon-Type Snubbers to millions of car owners.

These advertisements emphasize the fact that balloon and low-pressure tires demand Gabriel Balloon-Type Snubbers.

As a consequence, Gabriel sales are growing faster and faster.

Right now is the time to feature Gabriel Balloon-Type Snubbers to your trade.

In case you are not already stocked up, by all means get them.

The demand is active—and with the new Gabriel sales propositions your profits are extremely liberal.

Write the nearest Gabriel distributor, or direct to us for details.

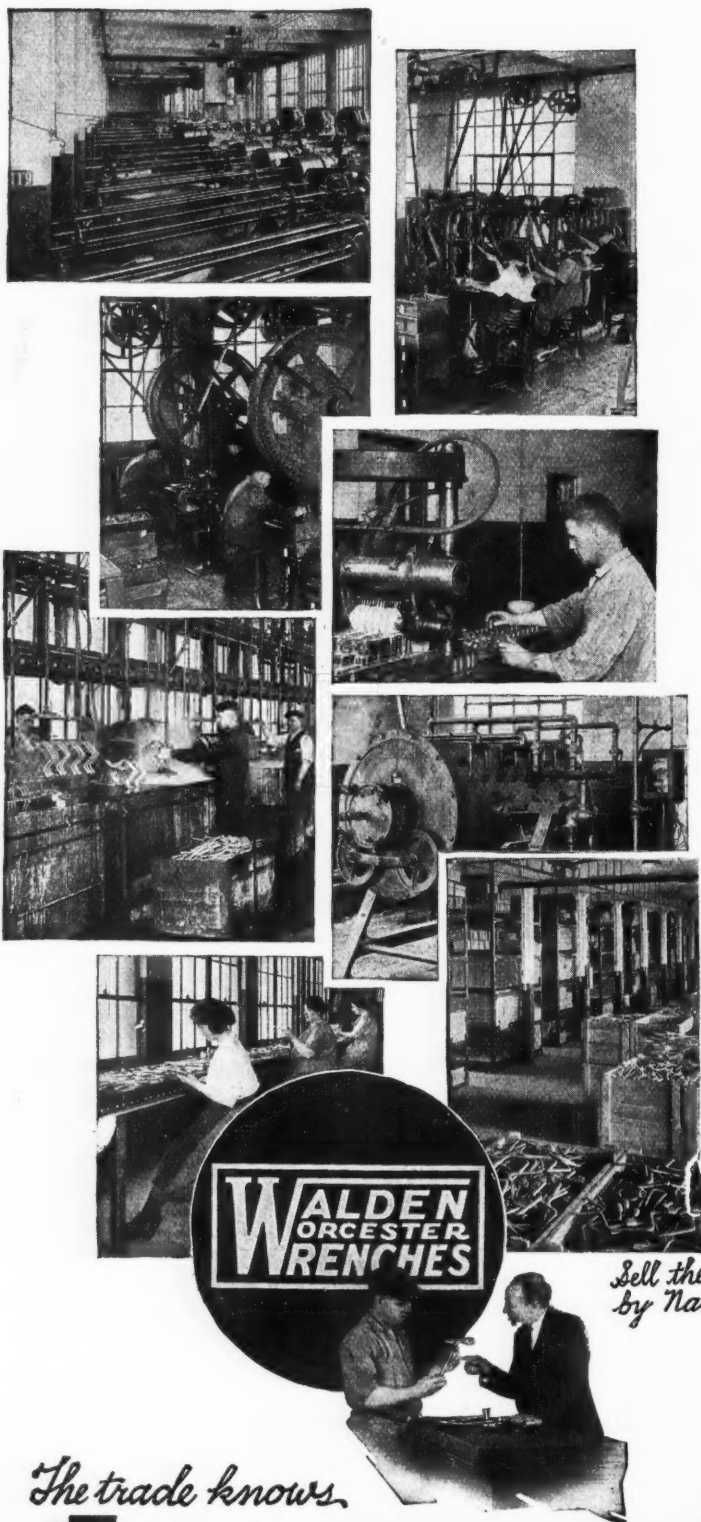
GABRIEL MANUFACTURING COMPANY  
1415 East 40th Street - Cleveland, Ohio  
Gabriel Manufacturing Co. of Canada, Toronto, Ont.  
~ Sales & Service Everywhere ~

# Gabriel

*Balloon Type*

# Snubbers

# The process of manufacture—



Walden-Worcester spares no effort to maintain the highest quality in socket wrenches—that you, the dealer, can back them on a guarantee against defects in material or workmanship.

*The seventh of a series of advertisements giving the reasons why it pays to be a Walden-Worcester Dealer.*

Since the inception of the Walden-Worcester Socket Wrench business, no effort has been spared to put the highest quality of materials and workmanship into the making of the Walden-Worcester line.

From the crude bar stock of the mill to the well finished and conveniently cartoned wrenches, every step in the process of manufacture is a highly specialized operation, brought about only by years of experimentation on the part of Walden-Worcester production engineers. The purchase of high grade materials, careful bending to eliminate possible fracture, accurate machining of socket heads, controlled heat treating, excellent plating, exacting inspection and the efficient packing of the Walden-Worcester line for your convenience, should all serve to weigh the balance down in favor of Walden-Worcester, when you are considering taking on a line of socket wrenches.

Just around the corner everywhere, there's a Walden-Worcester Jobber—buy from him.

**WALDEN-WORCESTER**  
INCORPORATED

General Offices and Factory  
**WORCESTER, MASS.**

*The trade knows*

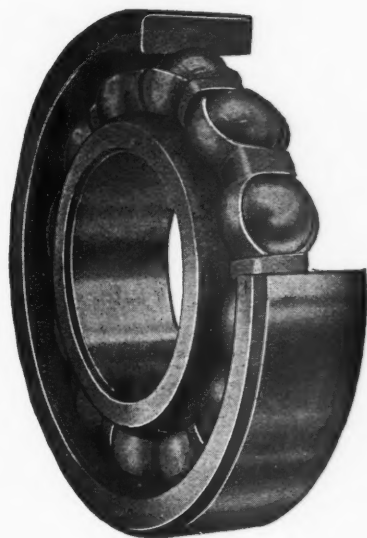
# WALDEN-WORCESTER

*The original and largest manufacturers of Wire Handle Socket Wrenches in the World*



# FAFNIR

## Adaptability

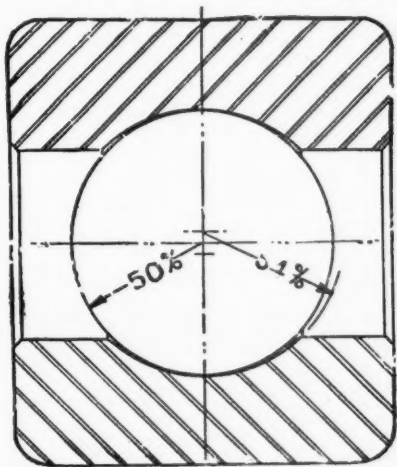


At one time it was generally imagined that each ball of a ball bearing rested between two points on the inner and outer races, and that these points supported the entire load. This is impossible on the face of it, as a point has no area.

In actual practice the ball races are ground on an arc of very slightly greater radius than that of the ball. Consequently, the balls normally roll on very narrow paths in the deepest part of the races.

Also—and this is of vital importance—the resiliency of the alloy steel used permit the balls a trifle more fully to fill the races as the load increases or when subjected to severe shock. The result is increase in load carrying capacity as conditions require it.

Thus the flexibility and broad range of adaptability of the highest grade ball bearings is at once apparent; and we would remind you once more that *Fafnir Ball Bearings* are manufactured with the utmost accuracy and finish from thoroughly heat treated alloy steel.



## THE FAFNIR BEARING COMPANY

New Britain, Conn.

CHICAGO, ILL., 2131 S. Michigan Ave.

CLEVELAND, OHIO, 1016-1017 Swetland Bldg.

DETROIT, MICH., 120 Madison Ave., Room 511

NEWARK, N. J., 271 Central Ave.

PHILADELPHIA, PA., 1427 Fairmont Ave.

# STOCK FRANCISCO AUTO HEATERS NOW!

## Cold Weather Will Be Here Soon!

ONE of these fine fall mornings you'll find frost on the ground. The sharp tang and bite of winter weather will be upon us. Motorists will fuss and fume over starting their engines—and shiver in their seats as they drive down town.

Then the rush for Francisco Auto Heaters starts. Every car owner wants the complete comfort they afford. He wants to drive all winter in a warm, well ventilated car. He knows the Francisco is the dependable, high grade heater that "delivers the goods."

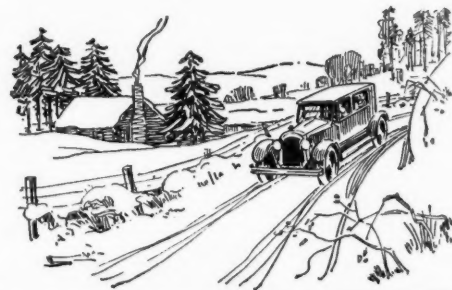
The Francisco has proven its superiority over all other automobile heaters. It delivers a steady flow of uniform heat that is evenly distributed to all parts of the tonneau. *It heats open as well as closed cars. It ventilates while it heats*, changing all the air in the car every two to three minutes.

Four or five blocks of driving—even at the low speed of 10, 15 or 20 miles an hour and the Francisco is delivering generous heat. It is easily and quickly installed and never gets out of order.

Be prepared for a big Fall and Winter business on Franciscos. *The Francisco Line brings easy sales in large volume—quick turnover—and a big margin of profit for you.*

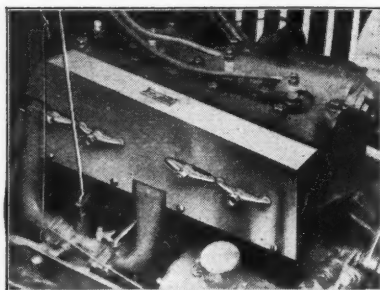
Write your jobber today for dealer's prices and complete information.

**THE FRANCISCO AUTO HEATER CO.**  
Dept. 14 Columbus, Ohio



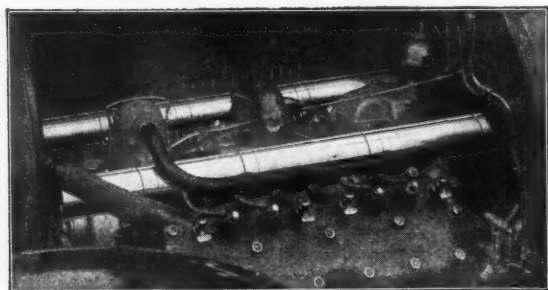
### Price List of Francisco Heaters

American	\$10.00
Anderson '22	10.00
Auburn 7R- and 8R Continental	10.00
Buick Four '22-'24	10.00
Buick Six '20-'24	10.00
Cadillac 53, 55, 57, 59 & 61-63	20.00
Chalmers '22-24	10.00
Chandler '20-'25	10.00
Chevrolet 4-80	5.00
Cleveland '21-'25	10.00
Columbia 6-Y Motor	10.00
Chrysler '25	10.00
Davis 6-Y Motor	10.00
Dodge, all models	5.00
Dort '22-'24	10.00
Durant Ansted '22-'25	10.00
Durant Four '22-'25	10.00
Earl '23-'24	10.00
Essex '20-'25	10.00
Flint '25	10.00
Ford Sheet Metal all models	2.50
Franklin Models 9 and 10 and 10C	10.00
Gardner '23-'25	10.00
Gray '23-'25	5.00
Haynes	10.00
Hudson '20-'25	10.00
Hupmobile '20-'25	10.00
Jewett '22-'25	10.00
Jordan '21-'25, 6 and 8	10.00
Kissel Kar	10.00
Lexington Ansted '21-'25	10.00
Maxwell '20-'25	5.00
Mitchell '20-'25	10.00
Moon 6-Y Motor	10.00
McFarlan	10.00
Nash Four '22-'24	10.00
Nash Six '20-'25	10.00
Oakland '20-'25	10.00
Olds Eight '20-'24	20.00
Olds Six '24-'25	10.00
Olds Four '21-'24	10.00
Overland Four '20 to '25	5.00
Paige 6-66	10.00
Peerless 6	10.00
Peerless 66	20.00
Pierce-Arrow Model 33 and 80	10.00
Reo '21-'25	10.00
Reo Speed Wagon	10.00
Rickenbacker '22-'24	10.00
Rollin '25	10.00
Star '23-'25	5.00
Stephens Salient Six '22-'25	10.00
Stearns-Knight '24-'25	10.00
Studebaker Light Six '21-'25	10.00
Studebaker Big or Special Six '19-'25	10.00
Stutz '20-'25	10.00
Velle	10.00
Westcott '24-'25	10.00
Willys-Knight '22-'25	10.00
Wills Ste. Claire '22-'25	20.00



### FROM FORD TO CADILLAC

THIS view shows a Francisco installed on a Ford Car. The one below illustrates an installation on a Cadillac. Francisco Heaters serve all



types of cars equally well. There is a Francisco Heater made for every standard car made and dealers find that the complete Francisco Line makes more sales and larger profits for them.

# FRANCISCO

## AUTO HEATER



**Put a U.S. in Your  
Garage or Service Sta-  
tion and forget about it.  
Just oil it occasionally**

*That's  
all!*



The U. S. Patented Pressure Release not only protects the motor but automatically discharges all moisture and condensation instead of pumping it into the tank, assuring clean dry air for all tires.

*If the pressure release is on the motor  
it's a Usaco.*

**The United States Air  
Compressor Co.**

5304 Harvard Ave., Cleveland, O.

**U S**

**U.S. Air Compressors**  
*Usaco*  
TRADE MARK



## *Low-Cost Transportation*

### *Quality Leader of the Low-Priced Field*

THE final determination of sales volume in the mass motor market will be the *strongest combination of quality with low price.*

That combination exists in the Star car and it is our firm policy to attain and maintain *leadership in volume* in our price class through *leadership in quality.*

Compare the Star, item for item, with other cars selling near our prices, and particularly learn the experiences of owners as to economy of operation, service costs and general satisfaction.

An impartial investigation will justify our claim of leadership in quality.

Backed by national advertising and sales direction of demonstrated power, the Star is rapidly approaching its proper position in volume.

Inquiries from established dealers for direct dealer franchises will receive prompt attention.

DURANT MOTORS · INC ·

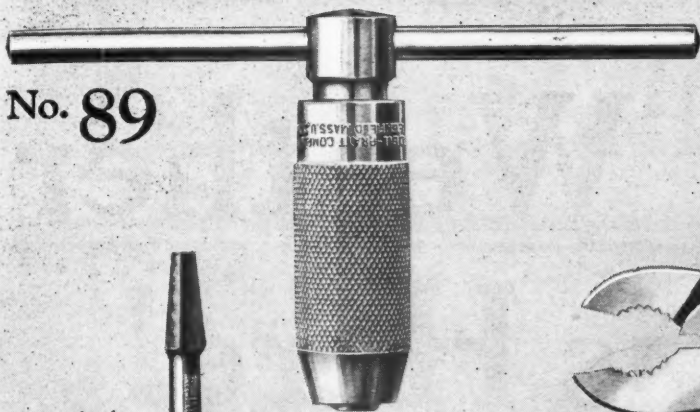
Fisk Bldg., 57th Street and Broadway,  
New York City

STAR PLANTS AT ELIZABETH, N. J., LANSING, MICH., OAKLAND, CALIF., AND TORONTO, ONTARIO.

# STAR MOTOR CARS

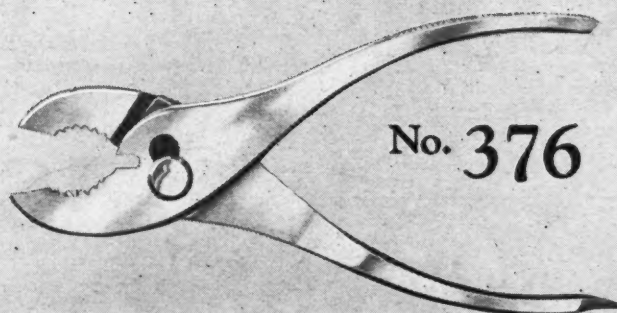


No. 89



No. 478

No. 41



No. 376

## Handy tools for service work

THE tools shown on this page are taken from the Goodell-Pratt Catalog No. 15, which shows all of the 1500 famous Good Tools.

Many of the Goodell-Pratt Tools are made especially for garages, service stations, auto mechanics, accessory dealers, and motorists.

Write for your copy of Catalog No. 15. It's free to you.

**Tap Holder No. 89, price 80¢.** Convenient for holding small drills, taps, reamers or other small tools to be turned by hand. Capacity up to  $\frac{3}{8}$  inch.

**Washer Cutter No. 41, price \$2.40.** Blades are adjustable both as to length of cutting edge and as to position. Can be removed for re-sharpening. All steel. Weight 8 oz.

**Hand Vise No. 97, price \$4.00.** Has taper square shank that can be removed from the handle and held in any two-jaw chuck. Jaw faces are  $1\frac{1}{2}$  in. x  $\frac{3}{4}$  in. Jaws open to  $1\frac{1}{2}$  in. Length  $8\frac{1}{2}$  in.

**Circular Glass Cutter No. 478, price \$1.10.** The graduated beam

can be set to cut circles of any size from 2 to 12 inches in diameter. Rubber base to prevent slipping. Weight 5 ounces.

**Combination Pliers No. 376, price \$1.20.** Has a cutting slot, a pipe grip, and is provided with a slip joint. One handle has a screw-driver end. Length  $6\frac{1}{2}$  in.

**Machinist's Hammer No. 559, price \$1.80.** High-grade tough steel, properly hardened. Temper scientifically distributed over the face and peen. Hickory handle. Length 12 inches; head 16 ounces.

**Cold Chisel No. 629, price 90¢.** Forged from high-grade octagon tool steel. Hardened, ground and tempered. Point  $\frac{3}{8}$  inch wide.

GOODELL-PRATT COMPANY, GREENFIELD, MASS., U. S. A.

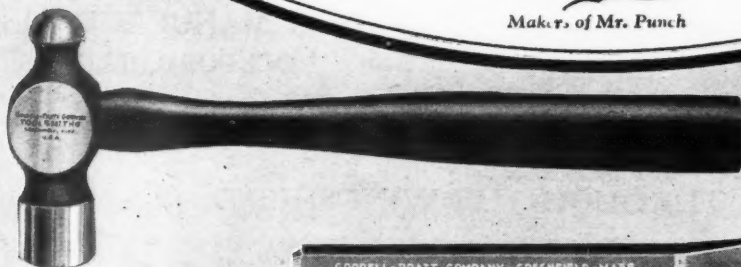
*Toolsmiths*

Makers of Mr. Punch

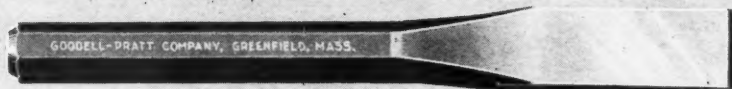
No. 97



No. 559



No. 629



# GOODELL-PRATT

## 1500 GOOD TOOLS

# Clymer Weather is Here!

## WEATHER BULLETIN

Rain, cooler, darkness forecast from now on—and more of it.

Every car needs a Clymer Through-the-Windshield Safety Light every night—it's only that more people realize it now, when nights are long and dark—and when cool, wet weather keeps curtains up and windows closed. Clymer weather is every weather—Clymer selling weather is **now**. Numbed fingers trying to operate an ordinary spotlight through the curtains make good Clymer salesmen for you! Night driving safety and conflicting headlight laws are live issues wherever tires turn. Clymer unquestionably solves both of them, with **light**—insurance worth many times its price.



Legal In Your State

## Ready to Sell?

How are you stocked to meet the season's demand for Clymers? We forecast a big fall and winter for Clymer dealers. Clymer merchandising helps will do their part. Clymer demand from motorists will do the rest. Are you ready? Get in touch with your jobber today.

Patented May 15, 1923, and July 15, 1924; others pending.

CLYMER MANUFACTURING CO.  
ROCKFORD, ILLINOIS

THROUGH-THE-WINDSHIELD  
**Clymer** Safety  
LIGHT

THROUGH THE WINDSHIELD WHERE THE SPOTLIGHT BELONGS



# They can't all be alike~

~there must be  
some one device  
for easy riding  
that is best

Many such devices *look* alike.  
Many of the claims for such devices *sound* alike.  
Obviously, they can't all *be* alike.  
How is the prospective owner to judge?

If you will look behind the similarity of appearance—if you will look behind the similarity of claims, your own judgment will soon guide you to a proper choice.

Those thousands of motorists who have decided that Stabilators are that *one best* and who are enjoying the riding comfort and safety afforded only by Stabilators are the ones who have taken that little trouble to investigate for themselves.

Instead of telling you here how Stabilators work and the hard-to-believe things Stabilation will do for you and your car, you may be more impressed to know that, with all of the older devices for easy riding to choose from, close to 100,000 car owners, in a little more than three years of Stabilator existence, have made Stabilators their choice.


On top of that, consider the judgment of the makers of really fine cars.

A predominating number of these car makers have already selected Stabilators as a standard factory feature on the cars they build.

Every Packard Straight Eight, for instance, goes to its purchaser Stabilated, and as the cost is some little more there is no reason for this choice except that the Packard engineering organization decided Stabilators were that *one best*. You, too, know "they can't all be alike."

Go to the trouble to find out for yourself, and then rely upon your own judgment. Write for Stabilator literature and the name of the Stabilator Dealer nearest to you.

JOHN WARREN WATSON COMPANY  
Twenty-fourth and Locust Streets  
PHILADELPHIA

  
**WATSON**  
**STABILATORS**  
 THEY WORK



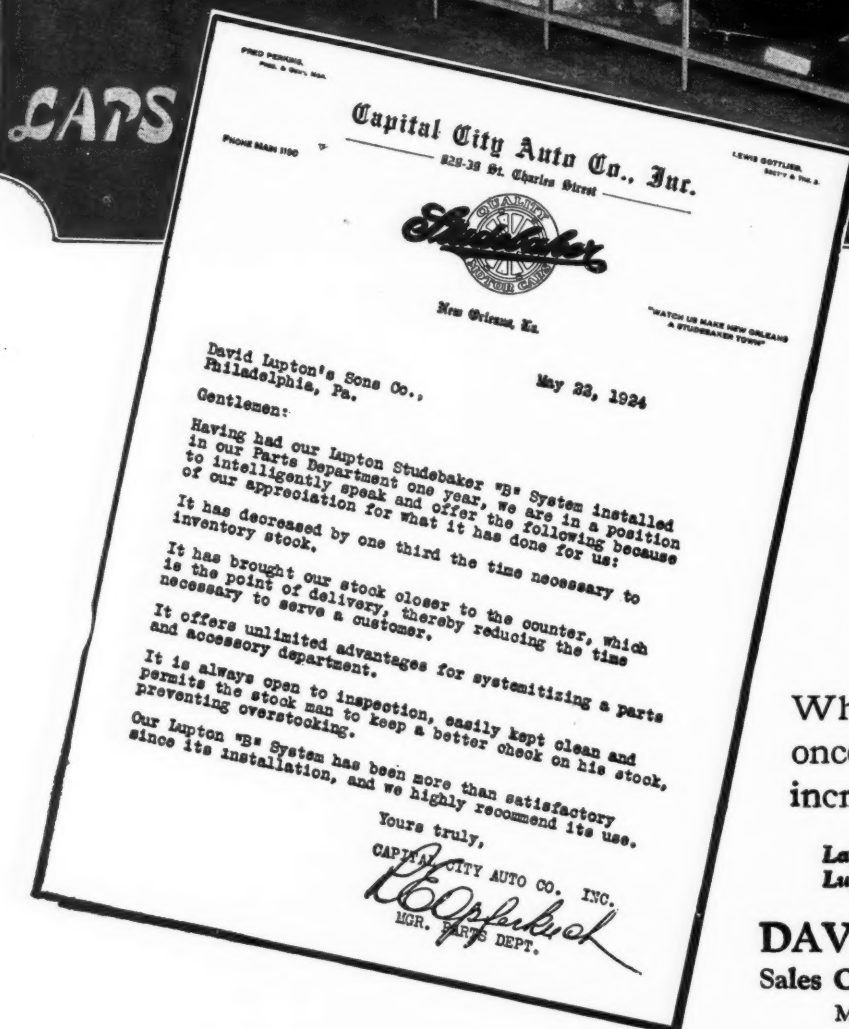
\$48 plus  
installation

Fords \$25  
plus  
installation

## The Basic Difference Between Stabilators and All Other Devices

Instead of stopping spring rebound with a snub or jerk at the tail end of the upthrow, Stabilators get on the job at the very beginning of the up movement and with a drag which is always proportional to the rebound force they firmly ease the body back to its normal position. By means of this firm, proportional control, Stabilators at once put an end to violent throwing and violent stopping.

## After a Year's Use, Capital City Auto Co. Highly Recommends LAPS



A LAPS System will prove in actual service to be a time-saver and a money-maker for you, just as it has for the Capital City Auto Co.

Why not get a LAPS System at once and begin to cash in on the increased profits it helps to bring?

Laps Systems are manufactured solely by David Lupton's Sons Co., and sold by Lupton jobbers

**DAVID LUPTON'S SONS CO.**  
Sales Office, 2631 Woodward Ave., DETROIT  
Main Office and Factory, PHILADELPHIA

# LUPTON AUTO-PARTS STORAGE





## “Three Best Sellers!”

**T**HE Folberth “Universal” model has proven itself to be the best automatic windshield cleaner built. 38 automobile manufacturers have adopted it as standard equipment. Over a million are now in use.

The Folberth “Junior” model is smaller and lighter than the “Universal.” With these two cleaners the Folberth dealer can satisfy the demands of every class of the automobile trade.

The Folberth “Parts-Kit” includes a liberal quantity of cleaner parts, a free set of special installation and adjustment tools, and a generous supply of advertising folders. The “Parts-Kit” makes an attractive counter display and builds sales of Folberth parts.

Ask your jobber or write us direct for full information. Start now to get your share of this fast growing business.

THE FOLBERTH AUTO SPECIALTY COMPANY,

Cleveland, Ohio

### SALES HELPS

Send for large six-color window display and numerous other sales helps. If your jobber cannot supply you promptly write us direct.

**FOLBERTH**  
*Automatic*  
**WINDSHIELD CLEANER**  
*“It Cleans While You Drive”*

# Remington

## The New and Better Cash Register

**T**HE entire department illustrated below is required simply to make the tools that are used in manufacturing Remington Cash Registers.

Merchants all over the United States are finding out that Remington is the *new and better* Cash Register.

You ought to see it.



### REMINGTON CASH REGISTER CO., Inc.

Factory and General Sales Office, Ilion, N. Y.

Subsidiary of REMINGTON ARMS COMPANY, Inc.

Makers of Remington Firearms, Ammunition and Cutlery

In Canada: Remington Cash Register Company of Canada, Ltd.  
558 Yonge Street, Toronto, Ont., Canada.

Akron, Ohio  
Albany, N. Y.  
Atlanta, Ga.  
Baltimore, Md.  
Binghampton, N. Y.  
Birmingham, Ala.  
Boston, Mass.  
Bridgeport, Conn.  
Brooklyn, N. Y.  
Buffalo, N. Y.  
Charlotte, N. C.  
Chicago, Ill.  
Cincinnati, Ohio  
Cleveland, Ohio  
Columbus, Ohio  
Dallas, Tex.

Davenport, Ia.  
Denver, Colo.  
Des Moines, Ia.  
Detroit, Mich.  
E. St. Louis, Ill.  
Fargo, N. D.  
Fort Worth, Tex.  
Fresno, Calif.  
Grand Rapids, Mich.  
Harrisburg, Pa.  
Hartford, Conn.  
Houston, Tex.  
Indianapolis, Ind.  
Jacksonville, Fla.  
Jersey City, N. J.  
Kansas City, Mo.  
Lansing, Mich.

Little Rock, Ark.  
Los Angeles, Calif.  
Louisville, Ky.  
Madison, Wis.  
Memphis, Tenn.  
Miami, Fla.  
Milwaukee, Wis.  
Minneapolis, Minn.  
Nashville, Tenn.  
Newark, N. J.  
New Haven, Conn.  
New Orleans, La.  
New York City  
Oakland Calif.  
Oklahoma City, Okla.  
Omaha, Nebr.  
Philadelphia, Pa.

Pittsburgh, Pa.  
Portland, Me.  
Portland, Ore.  
Providence, R. I.  
Reading, Pa.  
Rochester, N. Y.  
Sacramento, Calif.  
Salt Lake City, Utah  
San Antonio, Tex.  
San Diego, Calif.  
San Francisco, Calif.  
Scranton, Pa.  
Seattle, Wash.  
Sioux City, Ia.  
Spokane, Wash.  
Springfield, Mass.  
Springfield, Ohio

St. Louis, Mo.  
St. Paul, Minn.  
Syracuse, N. Y.  
Tacoma, Wash.  
Tampa, Fla.  
Toledo, Ohio  
Toronto, Ont.  
Trenton, N. J.  
Utica, N. Y.  
Vancouver, B. C.  
Washington, D. C.  
Wheeling, W. Va.  
Wichita, Kan.  
Wilkes-Barre, Pa.  
Wilmington, Del.  
Yonkers, N. Y.  
Youngstown, Ohio

*There is a Remington Cash Register built to fit your business. Get in touch with the Office nearest to you, and you will find our representative there willing and glad to make a complete demonstration.*



# Now in America

*After 25 years of leadership in Europe, FERODO Friction Linings are to be manufactured in America*

**F**ERODO FIBRE, FERODO BONDED ASBESTOS BRAKE LINING, FERODO BONDED ASBESTOS DIE PRESSED, and FEROBESTOS, four distinct materials, used on practically every European car, will now be supplied to the American trade on the same basis as other American automotive equipment.

The FERODO plant at New Brunswick,

N. J., will use the same patented processes and exclusive chemical formulas that have made the cast-iron-like durability and uniform braking qualities of the European product famous the world over.

Correspondence is invited from car and truck makers, and from automotive distributors, including those interested in high-grade Ford equipment.

*Féodo and Asbestos, Incorporated, New Brunswick, N. J.*

*Cars of World-Wide Reputation using  
FERODO Brake and Clutch Linings*

Angus-Sanderson  
Armstrong-Siddeley  
Arrol-Johnston  
Austin  
Auto-Carrier  
Bean  
Belsize  
Bianchi  
Bleriot  
Clement Talbot  
Crossley  
Cubitt  
Daimler  
Dennis  
E. A. S. T.  
Fiat

Isotta Fraschini  
Lancia  
Miesse  
Minerva Motors  
Morris Oxford  
Napier  
Officine Meccaniche  
Rolls-Royce  
Rover  
Ruston & Hornsby  
Sizaire-Berwick  
Standard (English)  
Straker-Squire  
Sunbeam  
Vauxhall  
Wolseley

All the Trucks and Buses of the London General Omnibus Co., use FERODO FRICTION LININGS; so do the Paris buses.

**FERODO**  
REGISTERED  
**FRICTION LININGS**

**FERODO BONDED ASBESTOS**

SELL THE ONLY OIL RING WITH A MILEAGE GUARANTEE



The SAV-OIL Guarantee makes  
it easier for your customers to say  
**YES than NO!**



Sav-Oil Piston Ring Co.  
2056 Jackson Blvd.  
Chicago, Ill.

Sav-Oil Ring Mfg. Co.  
550 Golden Gate Ave.  
San Francisco, Calif.

H. C. Alexander  
612 W. Seventh St.  
Little Rock, Ark.

Mountjoy Bros.  
733 W. Colfax  
Denver, Colo.

H. W. Blevins  
1532 Grand Ave.  
Kansas City, Mo.

C. H. Mountjoy & Co.  
211 Third Street  
San Antonio, Texas

Sav-Oil rings are guaranteed to give *at least* 1000 miles to the gallon of oil. It is an exclusive feature that will appeal to your most scrutinizing customers. It makes it easier for them to give you the overhaul job than not to.

It is one reason why Sav-Oil rings are such good sellers and profit makers. Best of all—they do give satisfaction.

Put these business builders to work for you. Order from the nearest distributor.

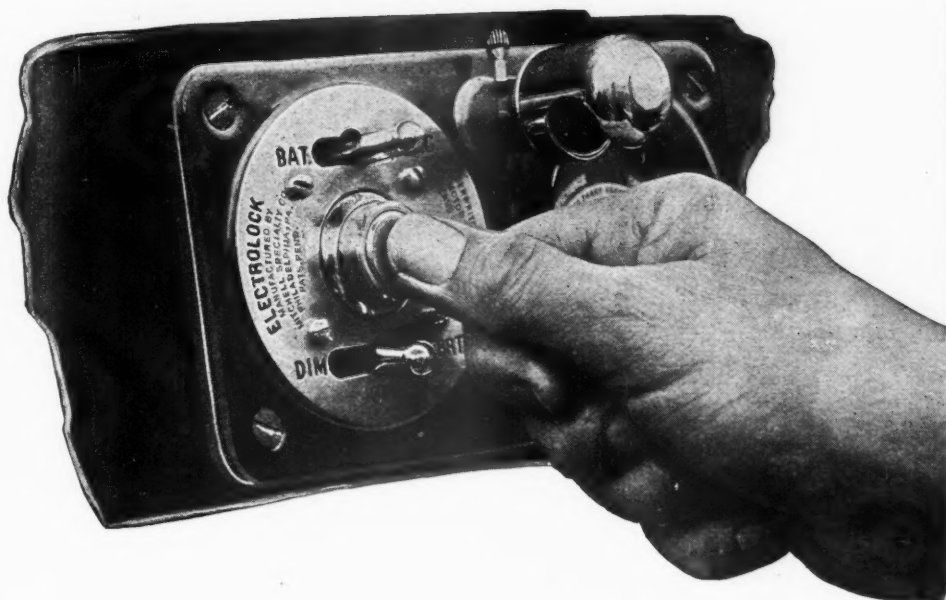
*Territories Open for Distributors*

**The Sav-Oil Ring Mfg. Co.**

1037 So. Figueroa St.

Los Angeles





## Click! and Your Car's Locked

One push on the ELECTROLOCK switch button both stops the motor and locks the ignition. Because the ELECTROLOCK is automatic it insures against the most common cause of stolen cars—the owner's failure to use his lock.

The ELECTROLOCK is always safe and always legal. Control cannot be lost by accidental locking since the ELECTROLOCK has no connection with the steering gear or transmission. Also in case of fire or traffic demands the car may be moved out of the way.

Tampering with the lock, removing the plate, attempting to wire around the ignition, cannot start the motor.

ELECTROLOCK is approved by the Underwriters' Laboratories. It earns the lowest of theft insurance.

Sold only through authorized Ford Dealers.

If you cannot purchase an ELECTROLOCK in your city or town, write us giving name and address of your nearest Ford dealer.

**MITCHELL SPECIALTY COMPANY**  
Philadelphia, Pa.

*Manufacturers of Automobile Body Hardware since 1914.*

**For FORD Cars**

**\$15**

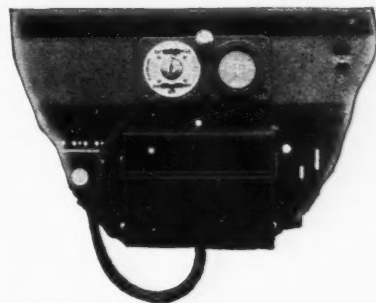
*Including dash light*

**Why this lock cannot  
be wired around**

All wiring necessary to the ignition system is enclosed in a heavily armored steel cable and the effectiveness of current brought from an outside source is prevented by a special switch mechanism contained within the device itself.

### Installation

of the ELECTROLOCK is very simple and easy. Merely replace original Ford switch panel with the ELECTROLOCK panel and wire up in the usual way. Twenty minutes at the outside will do the job.



# Electrolock

**YOU CAN'T FORGET TO LOCK IT !**



# Red Cat Heaters Sell All Winter

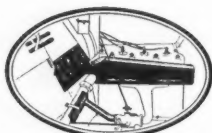
... because Red Cat has them all beat when it comes to furnishing plenty of heat and doing it quick.

We defy any other heater to match it in a real zero weather test.

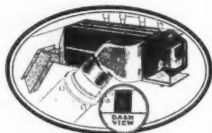
And to make that challenge good, we will send you a Red Cat Heater, any model, at half list price so that you can test its quick heat with watch and thermometer against any other heater you know of.

If you want to stock a heater your trade will like—and tell others about—stock the Red Cat line. Your jobber has them.

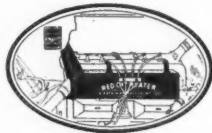
**G. A. Roth Mfg. Co.**  
Hastings, Nebr.



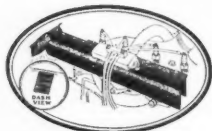
**FORD \$1.75**  
FOREIGN \$2.50



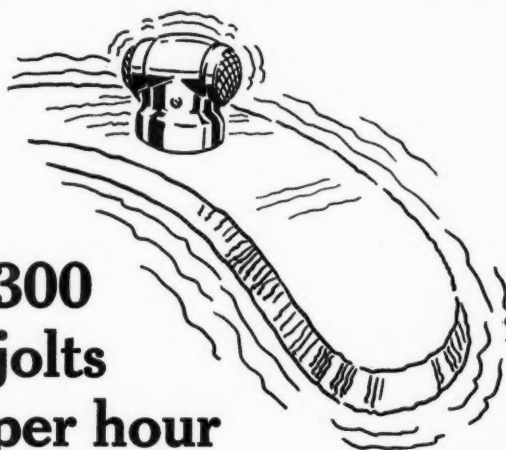
**CHEVROLET \$6.00**  
FOREIGN \$8.50



**DODGE \$5.00**  
FOREIGN \$6.50



**OVERLAND \$3.00**  
FOREIGN \$3.75



**300  
jolts  
per hour**

We don't know how many jolts per hour, but it is the destructive "shaking down" that has been studied in the designing of Victor Lamps. Victor engineers study the light and the condition under which it is to be used before producing the lamp. That is why Victor products give lasting service and satisfaction.

Only the finest material and workmanship enters the manufacture of Victor Lamps. There is something more to a motor lamp than a mere assembly of parts. It is that "much more" that you give the owners when you sell them Victor products.



**Victor  
No. 47  
"Firefly"  
Parking  
Lamp**

Terrific punishment cannot affect the "Firefly" because it is a one-piece casting and there are no joints to become loosened. Another feature of sturdiness is the unusually large and husky nut that holds this lamp to the fender. This not only holds the lamp securely, but also acts as a protective housing for the wire.

The "Firefly" is a miniature beauty—made like a piece of jewelry. It is equipped with imported cut jewels that throw an intensified red light

to the rear and white forward. The bulb is a battery saver, but is of ample power to project a protecting light to a safe distance.

It is also supplied with a green jewel lens in the side.

The "Firefly" is furnished with a dash switch and wire, ready to install. It is an attractive, lively selling item that costs little to carry in stock, but nets a good profit on every sale. Write today for details on this and other Victor Products.

**Victor**  
WIREWORK

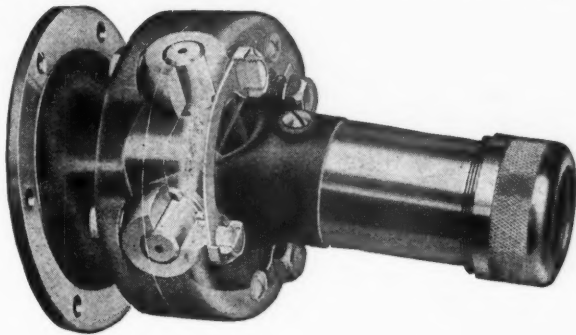
**The Cincinnati Victor Company**

714 Reading Road

Cincinnati, Ohio



## "MECHANICS" Oil Lubricated Universal Joint



As this oil lubricated Universal Joint is delivered to you completely assembled, filled with oil and ready to install, it is an ideal replacement part.

In fact, to install it, it is only necessary to cut the shaft, which is left long, and hook up to the companion flange already on the car. One filling of oil is, ordinarily, sufficient for several months of hard service; and you will find that this rugged Universal Joint will continue to function perfectly long after an ordinary joint would be replaced.

Very seldom do we hear of one wearing out in average use.

Wire or write for full information and price. This is the time to do it.

**MECHANICS MACHINE CO.**  
Rockford Illinois, U. S. A.

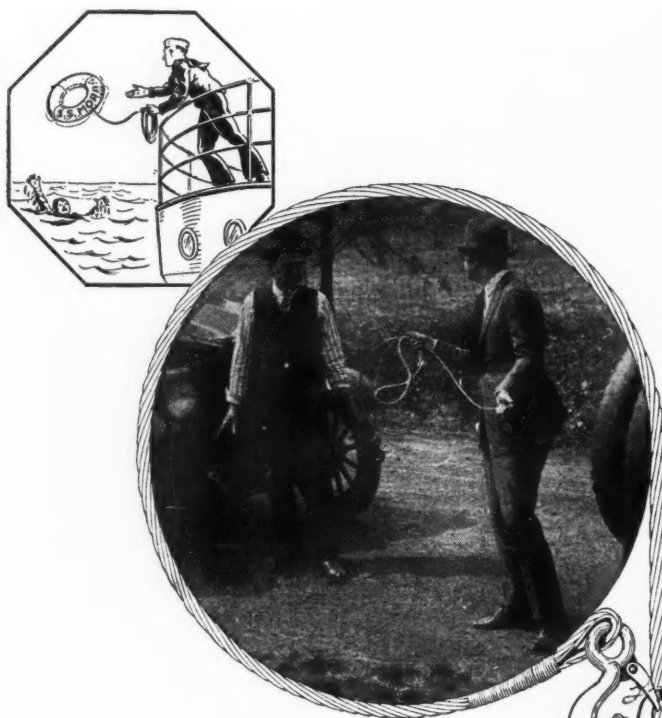
## Well Advertised Quickly Sold Liberal Profits

**T**HE three factors which interest the automotive jobber and dealer. Add to this a business-like, fair-and-square sales policy and you have the reason for leadership. The remarkable efficiency of this cleaner: its ability to restore the original gloss to any car has developed a demand which reaches volume proportions.



Distributed exclusively through the jobbing trade

**H. L. FEASEL'S LABORATORY**  
9-11-13 DESBROSSES ST. NEW YORK, N. Y.



## "A Life Preserver for Every Motorist!"

That's what thousands of car-owners say of Basline Autowline. And it *is* like a life preserver—not thought about until needed, and then you simply can't get along without it.

No matter what happens—engine trouble, a skid into a ditch, or whatnot—Basline Autowline is *tow-home insurance*! You simply hail the first passing car—hitch on behind—and in a jiffy you're on your way. Get one this week.

Don't buy "just a towline." Insist on dependable Basline Autowline—the *original* wire rope towline. Made of world-famous Yellow Strand Wire Rope. Handy, light, coils up flat and fits under your seat cushion. Has patented Snaffle Hooks. And only \$4.95, east of the Rockies. Don't put off buying this real necessity—this "Little Steel Rope with the Big Pull."

### Money for Jobbers and Dealers:

Basline Autowline pays you a good profit, it sells well, and is the **ONLY** Nationally-Advertised towline on the market. Push it this season.

**BRODERICK & BASCOM ROPE CO.**  
ST. LOUIS—NEW YORK



# BASLINE AUTOWLINE

# A Powerful PUMP

Specially designed for use in  
Service Stations



By buying now you can secure "America's Best Tire Pump" at exceptionally good terms. Correspondence invited.

**N. A. PETRY COMPANY, Inc.**

North Randolph Street

Philadelphia, Penna.

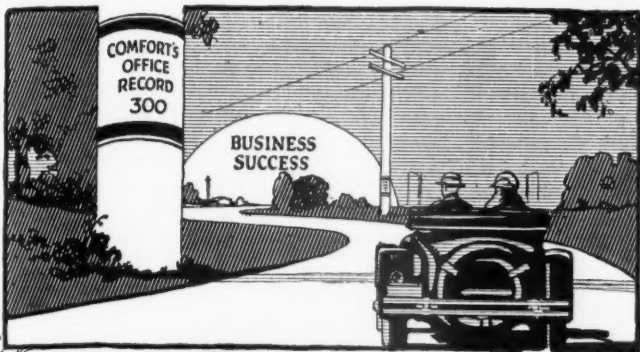
High grade, 5-ply HOSE, 27 in. long with LOX-ON CONNECTION. The absolutely tight check valve in base permits the use of a valve deflating pin making pumping easier.

The high grade malleable iron BASE spreads to allow full piston stroke in the most convenient pumping position. The feet can be folded, and clamped with wing nut for carriage.



"Stands by Itself"





## Know where you're going

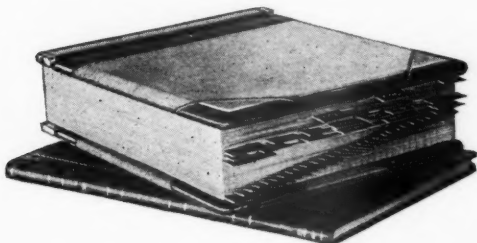
**G**ET on the right trail and stay there! Know every hour of every day exactly what it is costing you to operate your business! Have all the guiding facts right before you, in

### COMFORT'S OFFICE RECORD for Dealers, Garages or Repair Shops

Don't guess and go wrong—simply open your office record to the proper page and the facts you want are there, facing you! Yet there's no mystery about it—just a simple common-sense way to keep track of every sale, repair job or other business act. It's a one volume bookkeeping system prepared especially for garage owners, repair men and automobile dealers. Anyone can understand it. Anyone can operate it. A complete record for your entire business. Everything at a glance—sales, stocks, purchases, overhead, pay roll, accounts receivable and payable—even your income tax is quickly prepared from it!

### Sent on Ten Day Trial

Mail us your check for \$29.50 and we'll send you the complete system. Keep it 10 days. See how perfectly it fits your needs. Then, if you don't want it, ship it back at our expense and we'll immediately return your \$29.50. The whole transaction won't cost you a cent, as we pay all shipping charges both ways.



**Comfort Printing Specialty Co.**  
101 N. 8th Street, St. Louis, Mo.

"Shows the Road the Clearest"

## STOCK UP for CHRISTMAS

There will be a greater demand this year than ever for these splendid Spot-Lites in their attractive Christmas boxes.

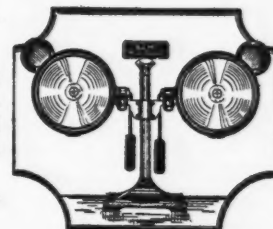


**T**HE S & M is the most beautiful and powerful Spot-Lite made in America. It adds distinction to any car. Any owner will be delighted to receive one or a pair of them as a Christmas present. Co-operate with us to make this year the greatest automotive Christmas.

### This handsome Display Stand

should be working in your store as a Silent Salesman. Send for it and let it sell S & M Spot-lites for you when you are busy:

"Something for the Car  
This Christmas"



S & M Display Stand

Send your orders in immediately to your jobber for a stock of these nationally-known Spot-Lites. They make beautiful window displays and sell quickly for Christmas presents.

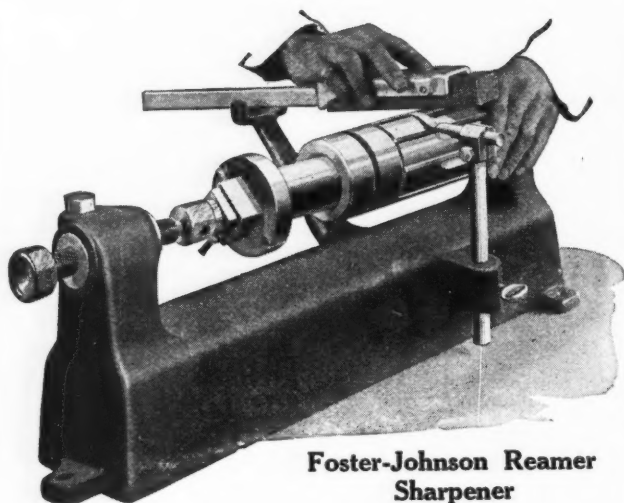
All well-known jobbers know S & M Spot-Lites. Send your order to him today and be prepared to do a big business for Christmas.

**S & M LAMP CO., Inc.**

118 W. 36th St.

Los Angeles, California

## Re-Conditioning Tools Every Shop Should Use



Foster-Johnson Reamer  
Sharpener

**K**YLIN General Purpose Reamers are designed to give the garage owner an extra means of handling motor re-conditioning work. They are adjustable, and though different in construction from the regular F-J Piston Reamers, operate with equal thoroughness. Each and every blade of the Kylin Reamer expands to the same identical diameter, producing a uniform depth of cut which is essential to the production of a quality job.

**T**HE speedy and dependable adjustment of Kylin reamers enables you to complete a hurry-up job in the time usually required to adjust an ordinary reamer.

**F**OSTER-JOHNSON Reamer Sharpeners provide you with facilities for keeping your reamers in first class condition. No shop is complete without these items of Foster-Johnson equipment.

Write for our Station Manual and Catalog of Re-conditioning Tools. Let us show you opportunities open to the shop that is Foster-Johnson equipped.

**FOSTER-JOHNSON REAMER CO.**

1312 Beardsley Ave., Elkhart, Ind.

# Rimplex

## Second Spare Tire Carrier

The Tire Carrier with the Bull Dog Grip

"Fits All Cars"

## Balloon Tires

Mean Extra Sales

Car owners who want to carry one or more extra spares are appealed to by the solid appearance of the RIMPLEX. Dealers investment small. Quick turnover.

Write for facts.

Type "A"—RIMPLEX—fits all 30x3 and 3½ clincher rims .....\$3.00

Type "B"—RIMPLEX— fits all 3½ and 4 S. S. and 4.40 balloon type rims ..... 3.50

Type "C"—RIMPLEX— fits all 4½ and 5.25 and 6.20 balloon type rims ..... 4.00

TRIPP-SECORD & CO.

606 Kerr Bldg.

Detroit, Mich.



Using two tires



Using three tires

## MORRISON AUTOMATIC DOUBLE RANGE WORM DRIVEN JACKS

S  
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A 100% BALLOON TIRE JACK. Most efficient for all MOTOR VEHICLES, from the lightest passenger car to the heaviest truck. Made in nine sizes.

The MORRISON LINE OF JACKS is low enough and high enough to meet every requirement, and is in great demand among the motoring public.

FOLLOW THE LEAD of the best automobile Engineers of America when you buy a jack.

"SURE HOLD"  
STEEL FLEXIBLE  
CAP

Standard equipment with more than fifty automobile manufacturers. We invite jobbers and dealers to write us for a good selling proposition. Easily lifted under or away from car by special socket. A feature your buyers will approve.



THE  
"KING OF JACKS"

MANUFACTURED BY THE  
Woods Engineering Co.  
Alliance, Ohio





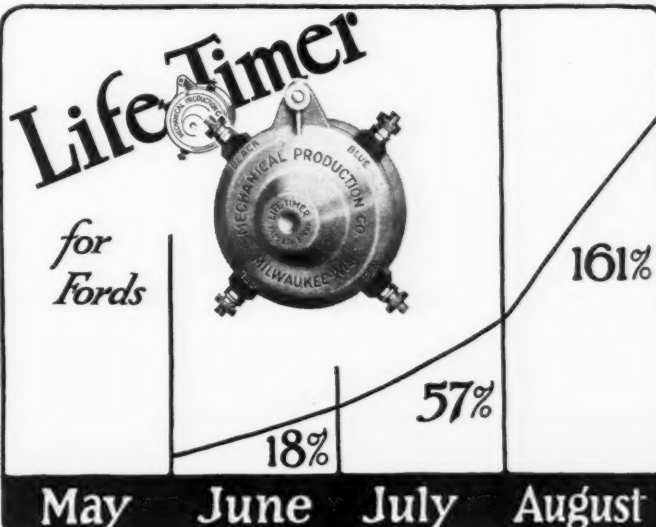
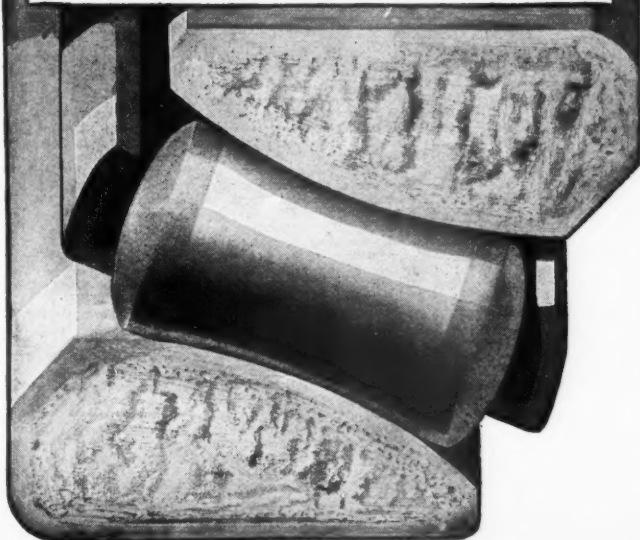
## SHAFER

**Self-Aligning ROLLER BEARING**  
PAT. & PATS. PENDING

**P**ROOF of the Shafer principle is substantiated by the thousands of cars Shafer equipped, giving their owners long and satisfactory service. They are self-aligning and carry all combinations of thrust and radial loads.

*Furnished in  
Interchangeable Sizes*

**SHAFER BEARING CORPORATION**  
6501 WEST GRAND AVENUE  
CHICAGO, ILL.



## "Sells and Repeats"

**L**OOK at the chart of sales increase of Life Timer for the last few months for confirmation as to real salability.

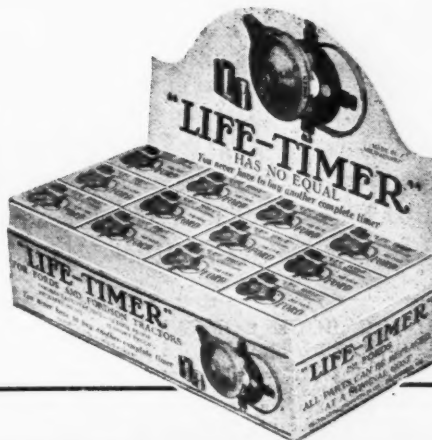
A dealer may buy the first time on the representations of the salesman, but he repeats on quality alone.

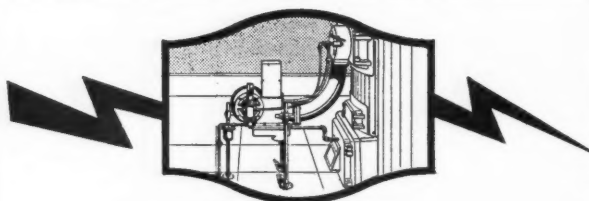
Life Timer is unqualifiedly guaranteed by its makers and is the only Timer with a reversible commutator. Needs no attention from the driver as it cannot short with oil or water.

**Mechanical Production Co.**  
Milwaukee, Wisconsin

### To Jobbers:

Write for samples and prices. Catalog material ready for your new book.





### For a Few of You -- AN OPPORTUNITY

For a few of you who are reading this, here is an opportunity to turn your past training and experience in the automobile business to greater profit in a new field.

This opportunity can be for only a few of you because the territory still available is decidedly limited. And besides, only aggressive, go-getters—men who can point to their successes—will be considered.

**The Product:** An automatic electric ignition oil burner. Soundly established; sold internationally. Quiet. Safe—listed as standard by the Underwriters Laboratories.

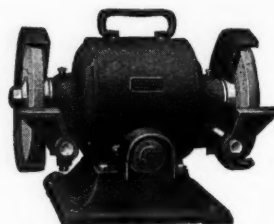
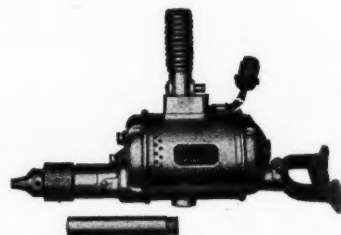
**The Opportunity:** By establishing a sales and service organization for this burner, to get in a relatively new and rapidly growing industry and to make more money than you are making now.

Write. Give full particulars as to your financial ability and your sales and service experience in your present business. If you measure up and if your territory is still open, we'll show a proposition you can't afford to miss.

**HOME APPLIANCE CORPORATION**  
2818 Locust Blvd. St. Louis, Mo.

## The Cincinnati

**1/2" Garage Special  
Electric Drill  
Ball Bearing  
Universal Motor**  
Price \$58.00



**6" Two-Wheel  
Bench Grinder  
Alternating  
Current**  
Now \$35.00

The "Cincinnati" line is complete, including extra attachments for valve grinding, carbon cleaning and other special automotive work.

Write for catalog

### THE CINCINNATI ELECTRICAL TOOL CO.

1515 Freeman Ave. Cincinnati, Ohio  
New York, 50 Church St. Cleveland, 517 Bangor Bldg.  
Philadelphia, 1220 Real Estate Trust Bldg.  
Detroit, A. H. Merschel, 4018 Hazelwood Ave.  
San Francisco, W. H. Gilbert, Jr., 1710 Larkin St.

## A SERVICE SUPERINTENDENT Has just off press his NEW BOOK

### Automobile Repair Manual

By R. E. Lomer

WRITTEN IN MECHANIC'S  
ENGLISH

**G**ives you all shortcut modern methods for repairs on all cars. It covers principles of operations in overhauling the complete engine and chassis, also explains the proper care and use of tools.

Many repairs are explained where special features are involved.

300 Pages, 6x9 ins., 169 Figs., Cloth—\$3.00.

**\$1 DEPOSIT WILL BRING YOU THIS BOOK**

**U. P. C. BOOK COMPANY,**  
239 W. 39th St., New York.

I enclose \$1.00 deposit. Please send me Lomer's Automobile Repair Manual. If it is satisfactory, I will remit the balance of \$2.00 within ten days, or return the book and my deposit of \$1.00 will be promptly refunded.

Name \_\_\_\_\_

Address \_\_\_\_\_  
Subscriber to Motor Age Oct. 9, 1924

### Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912

Of \_\_\_\_\_ MOTOR AGE \_\_\_\_\_ Chicago, Illinois \_\_\_\_\_ published Weekly  
at \_\_\_\_\_ STATE OF \_\_\_\_\_ for October 1, 1924  
COUNTY OF \_\_\_\_\_ Cook \_\_\_\_\_ SS.

Before me, a \_\_\_\_\_ Notary Public \_\_\_\_\_ in and for the State and County aforesaid, personally appeared \_\_\_\_\_ E. E. Haight \_\_\_\_\_ who, having been duly sworn according to law, deposes and says that he is the \_\_\_\_\_ Manager \_\_\_\_\_ of MOTOR AGE \_\_\_\_\_ and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Name of \_\_\_\_\_ Post Office Address \_\_\_\_\_  
Publisher \_\_\_\_\_ THE CLASS JOURNAL COMPANY \_\_\_\_\_ 5 So. Wabash Ave., Chicago, Ill.  
Directing Editor \_\_\_\_\_ Julian Chase \_\_\_\_\_ 239 W. 39th St., New York, N. Y.  
Managing Editor \_\_\_\_\_ Sam Shelton \_\_\_\_\_ 5 So. Wabash Ave., Chicago, Ill.  
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Sworn to and subscribed before me this Twenty-fourth day of September, 1924.

(SEAT.) MARGARET T. WILSON.

(My commission expires September 9, 1926.)



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You would scarcely attempt to re-grind an old warped valve. Then, why spend costly time re-grinding an old seat when this moderately priced valve seat reamer makes it unnecessary?

Thousands of shops say they pay for themselves on a couple of jobs. They last a long time.

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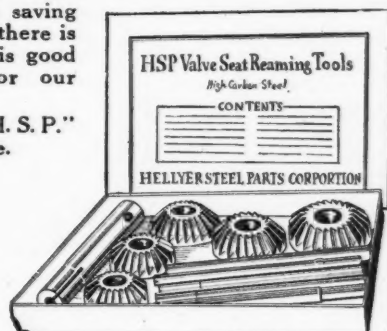
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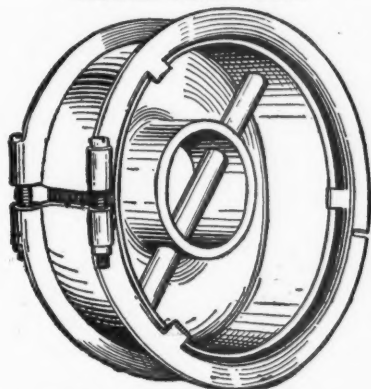
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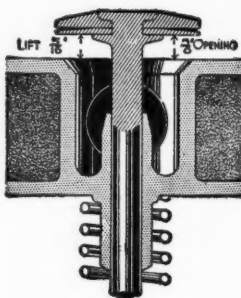
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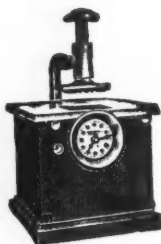
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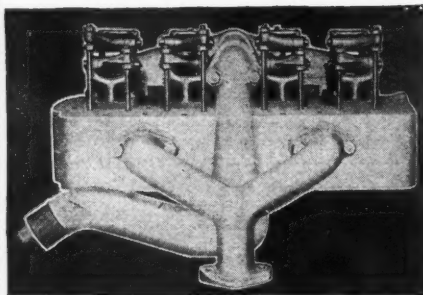
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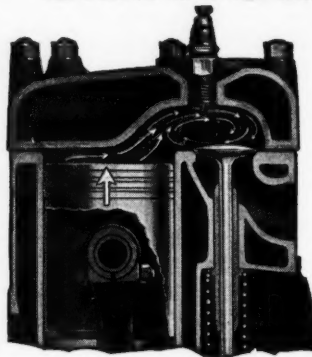
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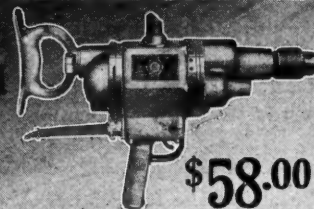


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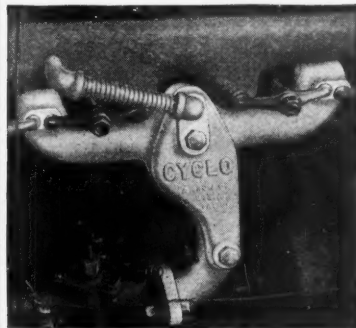
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Heat control by vacuum  
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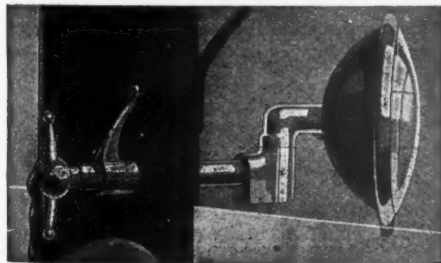
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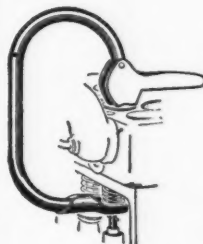
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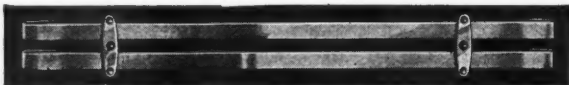
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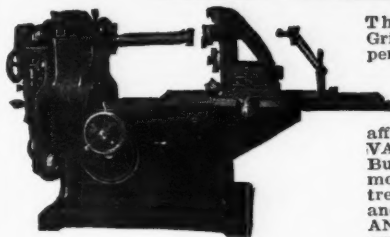


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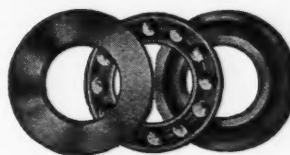


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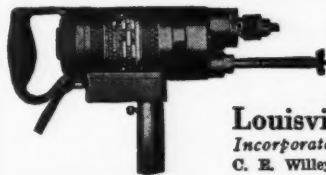
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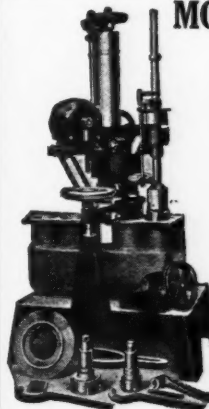


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**NO-LEAK-O PISTON RING CO., Dept. 376, Muskegon, Mich.**

**Holds Chains Tight and Saves Tires**



—an exclusive feature of the Chaneeze Improved Anti-Skid Chain Tightener. Self-adjusting tool. Individually boxed—costs no more than ordinary chain tighteners. Easily attached. Retail Price \$1.00 a pair.

**Electric Parts Corp.**  
318 E. Genesee St., Syracuse, N. Y.

Jobbers — Dealers — Write for discounts.

**Yes!** Outperforms any car in its class

**GARDNER**

BUILT BY THE GARDNER MOTOR CO. — BUILDERS OF VEHICLES SINCE 1882

**The Cooper** CUT-OUT  
ENGINE TESTER AND CARBON OUTLET VALVE

Nationally advertised. Universally demanded. Order from Your Jobber.

**BIGGER PROFITS FOR YOU NOW WITH NEW 8 HOUR BATTERY CHARGING**

HB 8-Hour Constant Potential Battery Charging doubles your present income. Lowers charging cost, saves one-half on labor, one-half on rental batteries needed. Patented HB Voltage Regulator eliminates reversing. \$35 cash brings complete outfit. Your big monthly profits easily carry small payments. 30 days' free trial. Write for bulletin. Hobart Bros. Co. Box AR 22, Troy, Ohio.

**THE LOWEST-PRICED COMPLETE OUTFIT ON THE MARKET**

**"Rest While You Ride"**  
with *Stewart* SHOCK ABSORBERS

\$30 per set of four (\$1.00 increase in West)

**THE ONLY ONE**

Isolators Lock Plates. An Exclusive Vesta Feature



A selling feature—and a very essential feature, too, are VESTA BATTERY ISOLATORS—a mark of merit in Vesta Batteries for the past 8 years. Write for the "Book of Facts" and details.

Vesta Battery Corporation  
Chicago, Ill.


**"CONNEAUT"**  
Plastic Metallic Packing

Patented

Stops the leaks in automobile water pumps. Mold it with your fingers. Makes a smooth metal bearing—adjustable and practically frictionless. At your Jobbers—Get it today. It does the trick. Put up in 1 lb. cans. If your Jobber doesn't carry it, write us direct. Price \$1.65 per pound, f. o. b. Conneaut, Ohio.

The Conneaut Packing Company Conneaut, Ohio

**DON'T**  
Turn Down a Rewind Job




Send it to us. We are "Armature Winding Specialists."

Profit for you in our service—Ford generator armature rewind—\$1.95. Other prices in proportion. All work guaranteed. Write for catalog and prices on all generators.

**H. M. FREDERICKS CO.,** Lock Haven, Pa.

**Lowest Priced Method of Efficient Spring Lubrication**



R & C Oiler comes in 30 ft. rolls. One roll will equip from 6-12 cars. Installed with pliers in few minutes. Real dealer opportunity. Good profits. Write. Exclusive distributors wanted.

**R. & C. MFG. CO.**  
Parkersburg, W. Va.

**Your success**

is squarely up to you. You can make more profits—have a better future under the Willys-Overland Franchise. Write for details.

**WILLYS-OVERLAND, INC., TOLEDO, OHIO**  
Willys-Overland Sales Co. Ltd., Toronto, Canada


**"In Stock — Not Over a Day Away"**



Write Milwaukee Die Casting Co., Milwaukee, Wis., for name of one of our 500 distributors nearest you.

**MILWAUKEE BEARINGS**





**\$5**

**Wood-Imes**  
Water Circulating Pump  
For Ford Cars and Trucks


Is as reliable as the Ford Car itself and assures a positive cooling system that constantly functions. No more overheating—No more freezing in travel—Made engineeringly correct of best materials—quickly and easily installed. Write for Dealer Discounts and complete information.

WOOD-IMES MFG. CO., MINNEAPOLIS, MINN.  
Formerly Mid-West Mfg. Co.

Let us send you our FREE Catalogue on

**Huetter's**  
Fly-Wheel Gear Bands

Huetter Machine & Tool Co.  
546 Kentucky Ave. Indianapolis, Ind.




**UNIVERSAL HOSE CLAMP**

Adjustable. Two sizes will clamp any hose of any diameter. Made from cold rolled steel out of wire. No rough edges to cut hose. Put on in less than a minute. Everlastingly leak-proof. Order Universal Hose Clamps. Trademark on every clamp and carton. Get them from your jobber—or write us.

UNIVERSAL INDUSTRIAL CORP. Hackensack, N. J.

Now offering both the matchless Peerless Eight and the Superb Peerless Six

**PEERLESS**



**The "Big Four"** A complete car washing service.

RUBBER COVERED—IMPOSSIBLE TO INJURE CAR. Used in connection with our Little Giant Water Savers, or can be applied to any 1/2 in. or 3/4 in. valve.

Rubber Nozzle—for full water flow.  
Spray Nozzle—for general purposes.  
Spout Nozzle—for cutting mud from fenders, etc.  
Slot Nozzle—a sheet of water covering a large surface with force.

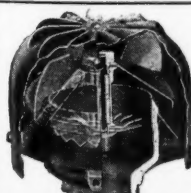
PRICE—Set of four Nozzles, \$2.00 less dealers discount.

The Gaylord Manufacturing Company  
Paterson, N. J.

**THE QUINCY SILENT AIR-MASTER**

*The Most Air Per Dollar Cost*

**WALL PUMP & COMPRESSOR CO.**  
Quincy, Ill., U. S. A.

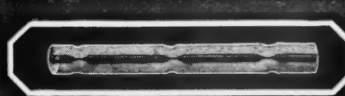


**Make the Air Cleaner Profits in Your Community**

**UNITED MFG. & DISTRIBUTING CO.**  
9707 Cottage Grove Ave., Chicago, Ill., U.S.A.  
Wm. E. Kemp, 245 W. 55th St., New York City  
New York and New England Distributor

**THE UNITED AIR CLEANER**  
*Dustless Air to the Motor*

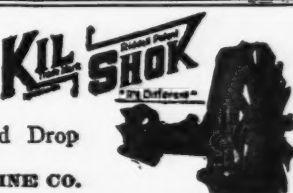
**REQUIRES ONLY HEAT**



**SAMPLE FREE**

CHICAGO SOLDER CO. 4201 Wrightwood Ave.

**Pulls Car Over Rough Spots**



No friction—no springs—no oiling. For Fords—solid Drop Forging—\$24.00.

**YORK ELECTRIC & MACHINE CO.**  
York, Pa.


**Big money in this service**

Dealers and shops make big money through the control of a franchise which entitles them to the exclusive use of the patented "KLEAN RITE" system of washing and polishing automobiles. This system has turned a job into an impressive, highly profitable business.

*Write for full particulars.*


**Klean-Rite Auto Laundry Company**  
1710 East 75th St. Chicago, Ill.

**The MINUTE \$2.50**



Greatest clock value ever offered the trade. Accurate—handsome. Protected against vibration. Regulated without dismantling dash. Great seller. Price in Canada \$3.50.

**The Lark Clock Manufacturing Co., Inc.**  
Waterbury - Connecticut - U.S.A.



**PERFECT PERFORMANCE**


The remarkable showing of the three Frontenac-Fords in the 500 mile race was due solely to the Frontenac Cylinder Head. This head is adapted for use on YOUR Ford by its designer and builder, Arthur Chevrolet. Book, "How to Build a Frontenac-Ford," \$2; free with orders of \$50 or more. Write for FREE catalog.

**CHEVROLET BROS. MFG. CO.**  
410 W. 10th St. INDIANAPOLIS, IND.

Boxed in 25 ft. Coils

**Smalley**  
Ready-shaped Inner-Rings

List Price \$3.00



*"Cut the Ring to fit the Job"*

**Smalley Accessories Corp.**  
2223 Cottage Grove Ave. Chicago

**Packard Cable**



**The Packard Electric Co.**  
Warren, Ohio

**QUALITY—PROFIT—TURNOVER**

**American Hammered Piston Rings**

**American Hammered Piston Ring Company**  
Baltimore, Maryland

**Lorentzen Headlight Kontrol**



AN AUTOMOTIVE NECESSITY THAT SELLS

**LORENTZEN HEADLIGHT KONTROL, INC.**  
60 Grand St. New York City

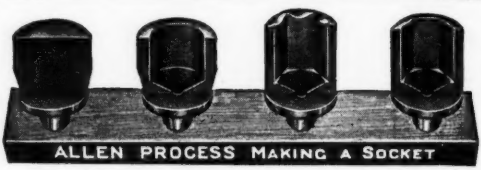
**FOUR SIZES**

# ELCAR

A WELL BUILT CAR

Elcar Motor Company      Elkhart, Indiana

Cold-Drawn Sockets



ALLEN Wrench Sockets

ALLEN PROCESS MAKING A SOCKET


The Allen Manufacturing Company, Hartford, Conn.



## Real High Tension Ignition for Ford Cars

Varley coils eliminate nearly all chronic ignition trouble. Save gas. Add power. Keep plugs clean. Stop misfiring. Save repairs. \$2.50 each. Write for full particulars.

The Autocoil Co., Jersey City, N. J.



For replacement in all makes of auto vehicles—

## Thompson Silcrome Valves

(they will not burn)

Thompson Products  
Cleveland

# Kawneer

SOLID COPPER  
STORE FRONTS

Write for Special Book Garage Fronts

THE KAWNEER CO., 1219 Front St., Niles, Mich.

# KISSEL

The Custom Built Car

The Aristocrats of Motordom

7 Models—Open and Closed

Distributors in principal cities. Open territory now being closed.

Kissel Motor Car Co.  
Hartford, Wis.




ACCURATELY MACHINED

## REPLACEMENT PISTONS

Semi-steel—for use after a rebore or re-grind job. Made to manufacturer's specifications. Made to pass motor builder's inspection. Standard sizes and oversize. Write for price list.

THE DALL MOTOR PARTS CO.,  
P. O. Station D, Cleveland, Ohio

## "The Best-Equipped Shop Gets the Business"



## WELCO "NEVA-LOST" GAS TANK CAP \$1.50

The Welker-Hoops Mfg. Co., Middletown, Ct.



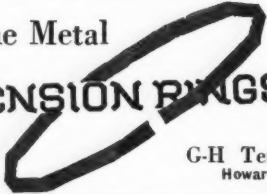
# Lycoming

MOTORS

FINE FOURS AND EIGHTS—IN—LINE

LYCOMING MANUFACTURING CO., Williamsport, Pa.

All in the Metal



## G-H TENSION RINGS

G-H Tension Rings of the finest steel, properly tempered, not only make but keep old motors running like new—Stop piston, slap and oil pumping. Real TENSION Rings—not just inner rings.

G-H Tension Ring Co., Inc.  
Howard St. and Armory Pl.,  
Baltimore, Md.



# BURD

GILMAN

## SHOCK ABSORBER

The Perfect Snubbing Device with the Steel Cable Distributors Everywhere

Burd High Compression Ring Co., Rockford, Ill.

# JOHNSON Gas Appliances

Metal-Melting Soldering Heat-Treating

**JOHNSON GAS APPLIANCE CO.**

*Cedar Rapids IOWA*

Pacific Coast Repr., C. B. Babcock Co., San Francisco, Calif.  
New York Office—277 Lafayette St.

# GATES VULCO

Fan Belts and Radiator Hose

Made By

The World's Largest Makers of Fan Belts

The **AERMORE** Exhaust Horn



The Signal with a Smile

One of the fastest selling nationally advertised accessories on the market. Order from your jobber.

Write for Free Catalog No. 31

Styles for All Cars



# Gemco

BUMPERS

Special Process Tempered Greater Cushioning Resiliency

GEMCO MFG. CO.  
742 So. Pierce St. Milwaukee, Wis.



# The Broadcaster

A Department that will Find What You Want

## PARTS

## HOUSE OF A MILLION AUTO PARTS

THE LARGEST STOCK OF NEW AND USED CAR AND TRUCK PARTS IN THE WORLD. WE HAVE EVERYTHING.

New and Used Motors, Gears, Axles, Bearings, Springs, Magneto's, Generators, Clutches, Starters, Universal Joints, Radiators, Cushions, Wheels (Wood, Disk, Wire), Carburetors, Piston Rings and Pins, etc.

Always mention model and serial number in order.

Write us. All inquiries answered promptly

DOUGLAS AUTO PARTS CO., INC.  
2003-5-7-9 South State St. Chicago, Ill.

## AUTO Save 50-90% PARTS 2000 Models

NEW AND USED GEARS, AXLES, BEARINGS, SPRINGS, MAGNETOS, GENERATORS, ETC. JOBBERS IN BANKRUPT AUTO SUPPLIES.

BRIGHTMAN AUTO EXCHANGE  
321 Windsor Ave. HARTFORD, CONN.

## DOWMETAL PISTONS

Lighter, stronger, and longer wearing than aluminum or iron. Can be fitted with bronze bushings in the wrist pin holes same as in iron pistons. Dowmetal has no permanent growth. The expansion is little more than iron.

SEND FOR PARTICULARS

LAMBERT & MANN CO.  
Cylinder and Crankshaft Grinding  
215-21 N. Wood St. CHICAGO Phone West 4918

ANY PART Send for Catalogue  
for ANY CAR Cincinnati Auto Parts  
NEW & Wrecking Co.  
or 712-714 Walnut St.  
USED CINCINNATI, OHIO  
Parts our middle name

## AUTO PARTS

SAVES 50% TO 75% ON ALL CARS

New and Used Gears—Springs and Axles—Cylinders—Motors—Rear Systems, etc. Wire or Write

INDIANA AUTO PARTS CO.  
316-18 NO. ILLINOIS ST. INDIANAPOLIS, IND.  
LARGEST CAR WRECKERS IN INDIANA

FOR SALE—Front Wheel Brakes for any make car. Have about 80 sets and tools. Also patents. Chance for automobile mechanic. A. Hubalek, 744 Willoughby Ave., Brooklyn, N. Y.

ADDRESS: FORD RIDEASY, 223 Grand Ave., W. Detroit, Michigan. Absolutely kills the chatter shocks and irons out the rocking rebounds.

## SPECIAL EQUIPMENT

FOR SALE—Kohler Light Plant, 1500 Watts, just like new. Used for Demonstrating purpose only. Henry F. Laebke, West Bend, Wis.

FOR SALE—Akron Williams Vulcanizing Equipment. New and in first-class condition. Price attractive. BECK & CORBITT COMPANY, First & Ashley Sts., St. Louis, Mo.

## PLATING and REFINISHING

NICKELPLATING  
SILVER—GOLD—BRASS—COPPER

AUTOPARTS REFINISHED

AUTOLAMP & REPAIR CO., 1249 Michigan Ave., Chicago.

## INFORMATION

Six cents a word is the rate for all undisplayed advertisements set solid, regular want ad style; all capitals, 9c. a word; all capitals leaded, 12c. a word; minimum charge \$1 an insertion; payable in advance (see next paragraph).

Ten per cent discount if one payment is made in advance for four or more consecutive insertions. Advertisements other than "Positions Wanted" will be billed monthly if run more than four times.

Add five words for address if replies are to come to a box number address at any of our offices. These replies are forwarded each day as received, in new envelopes, at no extra charge.

Refund will be made if all insertions ordered are not needed, the amount refunded being the difference between cost of insertions given and full amount paid.

Telephone orders must be confirmed in writing same day. No allowances can be made for errors of any kind unless prompt notification is sent us.

When replying to blind ads be careful to put on your envelope the correct box number and do not enclose original letters of recommendation—send copies.

Displayed advertisements are sold by the inch. Rates will be furnished upon application.

The right is reserved to refuse any advertisement and also to rewrite and edit copy furnished whenever the publishers consider it advisable to do this.

## THE BROADCASTER DEPARTMENT

## THE CLASS JOURNAL COMPANY

239 W. 39th St., New York  
5 S. Wabash Ave., Chicago

## PATENTS and PATENT ATTORNEYS

Attorney-at-Law and Solicitor of Patents  
C. L. PARKER

Formerly Member Examining Corps, United States Patent Office

American and foreign Patents secured. Searches made to determine patentability and validity. Patent suits conducted. Pamphlet of instruction sent upon request. McGill Building, WASHINGTON, D. C.

## AUTOMOTIVE PATENTS

Engineer-Attorney Specializing in Power and Automotive Inventions

M. P. LAUGHLIN

47 West 42nd St., New York

## PATENTS

Secured, Trade-marks and Copyrights Registered Prompt service. Highest references. Established 1864. Milo B. Stevens & Co. Registered Patent Attorneys. Offices 639 F. St., Washington, D. C. 10 Monadnock Block, Chicago. 341 Leader News Bldg., Cleveland, O.

## PATENTS

BOOKLET FREE HIGHEST REFERENCES PROMPTNESS ASSURED BEST RESULTS Send drawing or model for examination and report as to patentability WATSON E. COLEMAN, Patent Lawyer 644 G. Street, N. W., Washington, D. C.

## PATENTS

Write for my free Guide Books "How to Obtain a Patent" and "Invention and Industry" and "Record of Invention" blank before disclosing inventions. Send model or sketch of your invention for instructions. Promptness assured. No charge for above information. Clarence A. O'Brien, Registered Patent Lawyer, 233-A Security Bank Building, directly across street from Patent Office, Washington, D. C.

## BUSINESS OPPORTUNITIES

FOR SALE—Garage 40x100 with 75 car Chevrolet contract in northwestern Pennsylvania. In town surrounded by good farming section on improved state highway. Modern 5 room flat, second story. Good business. Good reasons for selling. Approximately \$17,000 takes everything. Address Box 6186, c/o Motor Age, 5 S. Wabash Ave., Chicago, Ill.

FOR SALE—Garage and machine shop, Standard Oil filling station. Distributor for Star, Durant and Flint cars in Northern Minnesota. Best little town in state. We have too much other business. Address Box 6184, care Motor Age, 5 S. Wabash Ave., Chicago, Ill.

WANTED—To buy or rent, garage located on good highway in small town. State volume of business, amount of cars stored, description, price and terms. Address Box No. 6187, care of Motor Age, 5 S. Wabash Ave., Chicago.

## AGENTS and DISTRIBUTORS

EXCLUSIVE AGENTS: WE WANT AN AGENT IN EVERY TERRITORY TO SELL THE FAMOUS K-W ROAD SMOOTHERS, A COMBINED SHOCK ABSORBER AND SNUBBER FOR FORD CARS. SET OF FOUR SELLS TO CAR OWNER FOR \$20.00. WILL MAKE ARRANGEMENTS WITH RIGHT PARTY FOR EXCLUSIVE TERRITORY TO SELL FORD OWNERS, DEALERS AND GARAGES. SEND FOR LITERATURE AND WRITE US ALL ABOUT YOURSELF. THE K-W IGNITION CORPORATION, DEPARTMENT "B," CLEVELAND, OHIO.

DISTRIBUTORS WANTED—Wonderful Vapor Humidifier and gas saver will increase mileage of auto, truck or tractor. 200% profits. Exclusive agent with car wanted in each county for demonstrating. Progressive repair shops and service stations acceptable as agencies. W. G. Critchlow, Box 427, Wheaton, Ill.

## MISCELLANEOUS

WANTED—183 INCH RACING MOTOR OR CAR. ADDRESS BOX 6185. c/o MOTOR AGE. 5 S. WABASH AVE. CHICAGO, ILL.

WANTED—List and attractive prices on overstock of Ford parts and anything in accessory line. We have overstocks. Write for our list. East Texas Auto Supply Co., Tyler, Texas.

## HELP WANTED

SALESMEN calling on garages can get exclusive territory on new labor and time saver and other garage equipment. Liberal commissions. Full or part time. Products not competitive. Box 448, Aurora, Illinois.

## SITUATIONS WANTED

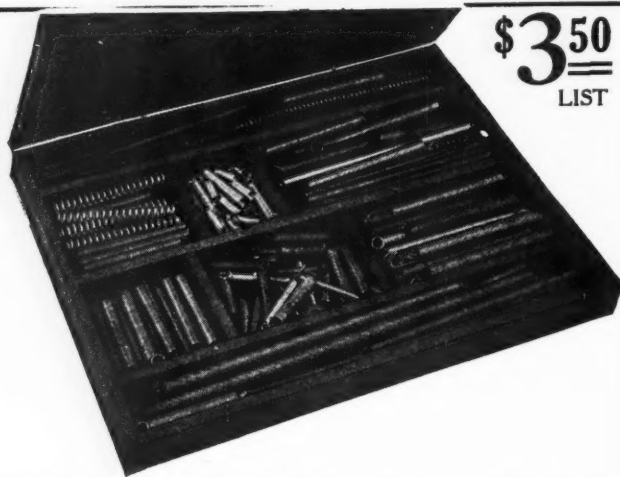
POSITION WANTED—by man with experience with accessories, parts room and bookkeeping. Prefers to locate in Utah, Idaho or Oregon. Eight years' experience in automobile business. Address Box No. 6183, care Motor Age, 5 S. Wabash Ave., Chicago, Ill.

Some other reader wants to buy what you want to sell—let

**Broadcaster Service**

find him for you

## All the Springs you need



**\$3.50**  
LIST

## Only \$3.50 for this Peck Assortment

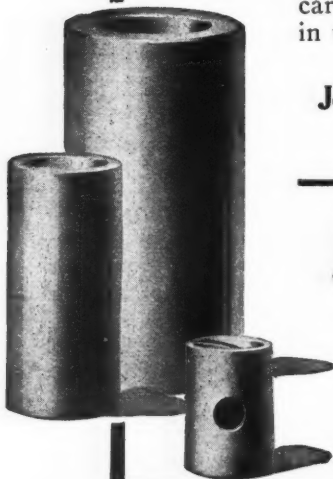
Be equipped for prompt spring replacements at a profit. This PECK Garage Assortment gives you a big variety of fine quality coil springs for your auto repair work. Generous quantities of the most needed sizes. Conveniently packed in a well-built partitioned wood box. An orderly way to keep stock. Order this splendid assortment today. Mention your Jobber for trade discount. Jobbers write for sales plan.

**THE PECK SPRING CO.**  
PLAINVILLE, CONN.

## Carried in Stock by More Than 300 Jobbers

Johnson Bronze Bushings are carried in stock by the majority of those jobbers who specialize in standard quality goods, because Johnson Bronze Bushings have been standard equipment on fine motor cars since pioneer days in the industry.

**Johnson Bronze Co.**  
New Castle, Pa.



**JOHNSON**  
STANDARD  
QUALITY  
**BUSHINGS**

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# Bosch

**Franchise Details for  
Selling Genuine Bosch  
Products Will Be Gladly  
Sent to You Upon Request**

*Always look for the full  
name "Robert Bosch"  
and trade mark shown  
below.*

**ROBERT BOSCH MAGNETO Co., Inc.**  
OTTO HEINS, President  
109 West 64th Street  
New York



TRADE

MARK

ONLY

**Genuine  
APEX  
Innerings**

**SUCCESSFULLY  
Stop Oil Pumping and Piston Slap**

1. Patented long reverse curves, found only on APEX Innerings, absorb the shock of the piston slap and gently hold the piston ring face flush against the cylinder wall.
2. Patented short, rounded curves centralize and stabilize the pistons and thereby stop oil pumping and piston slap without exerting harmful outward pressure in the piston rings. Rounded curves can not break, which is not the case where sharp crimps are necessary to avoid infringing on APEX patents.
3. Khaki colored, imported Swedish steel, made under our own formula and guaranteed to not lose its spring at any motor heat.
4. Rounded ends make possible fitting up to .045 oversize. Standard sizes only are necessary.
5. The guarantee with financial strength enough back of it to insure every one genuine satisfaction.

**Retail  
20c each  
Extra Large  
Sizes 35c each**

Dealers write for complete details. Find out how others are making Genuine Apex Innerings pay big profits.



**THOMSON MFG. CO.**

DEPT. C, "If it isn't an APEX—It isn't an INNERING" PEORIA, ILL.

# Everybody Says So— a Bargain at \$2!

You don't have to do any "selling" to get two dollars for the Bakelite-cased Milwaukee Timer.

Just put one on the counter beside any other timer. Nine out of ten Ford owners will pick up the Bakelite-cased Milwaukee first, and will be surprised that its price is only \$2.

It looks like—and IS—a better timer than most higher-priced ones. It is a roller-type timer (the only kind Ford experts recommend), and its sturdy, "short-proof" Bakelite case makes it trouble-free throughout its longer life.

Milwaukee Timer advertising—in all the big magazines and farm papers—has been constantly selling the new Milwaukee for you. All you have to do is **stock them** and **display them** for a bigger timer business.

*Order from your jobber.*

**MILWAUKEE MOTOR PRODUCTS (Inc.)**  
Milwaukee Wisconsin

## *New Milwaukee Features*

Bone-hard fiber race pressed to a tight fit in the Bakelite case. Remains satin-smooth for thousands of miles.

Only Bakelite case on a Ford-type timer. Makes the Milwaukee absolutely "short-proof." Puts it in a class with high-priced ignition units.

Fine steel contact points with welded stems. Locked in position. Extra thick throughout for longest life.

Famous Milwaukee Timer brush assembly. Two bronze castings, fitted and gauged for accurate alignment. Hardened steel roller, finished like a ball bearing.

# MILWAUKEE TIMER *for FORDS* (BAKELITE CASE)

### Display Cut-out—Free!

Three-color Window and Counter display. Holds a Milwaukee Timer from stock. New process—oil colors, extra brilliant, washable. Sent free, postpaid. Write us direct.

No increase in price.

Sells **FAST** at

**\$2.00**

(\$2.75 in Canada)





# 100% in performance

Five minutes of your time spent in comparing the Williams Accelerator for Fords with any other Ford foot throttle will prove to you once and for all which accelerator looks best.

And, any one of two million Ford owners whose cars are Williams-equipped will tell you that Williams Accelerator performance is one hundred per cent.

## Suggestion

We have just issued an unusually attractive folder in two colors, describing and showing Williams Accelerators. Put one of these in every Ford that comes in for storage. This will sell Williams Accelerators for you. Write us for a supply of folders. No charge for these.

Appearance goes a long way in making a sale. That's why Williams Accelerators sell themselves to Ford owners when displayed.

And once installed, Williams Accelerator performance is so remarkable—so satisfactory that every sale means at least three more sales—to other Ford owners who see it, hear of it and want it.

Don't get the idea that all Ford foot throttles are alike. That isn't true. From the tip of its handsome curved pedal to the end of the carburetor rod, the Williams Accelerator is different! And the difference is patented—for your protection and ours.

Two Models—Regular, \$3.00

Junior, 1.50

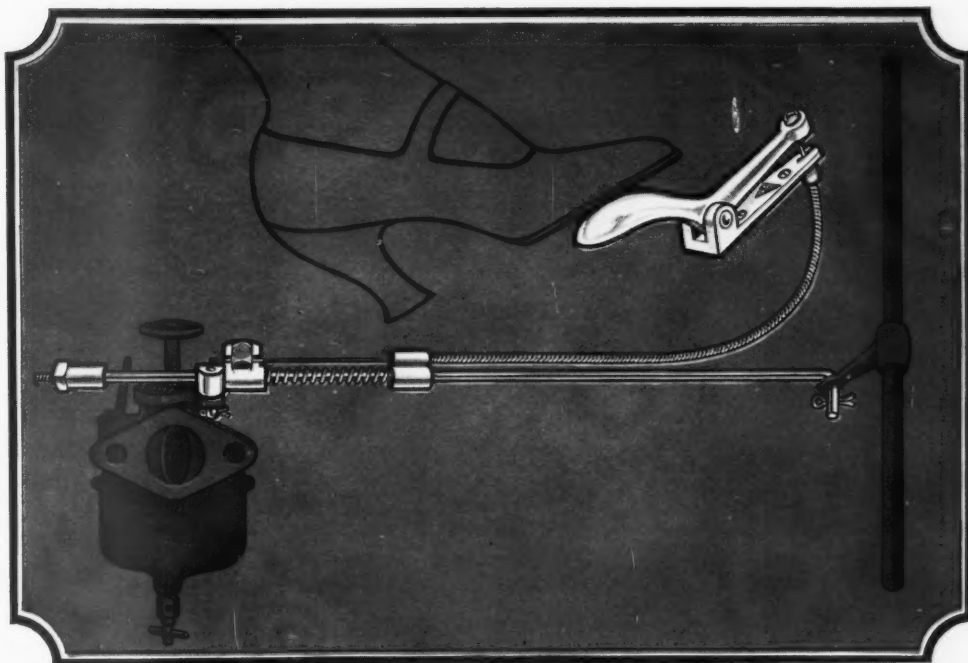
ORDER FROM YOUR JOBBER

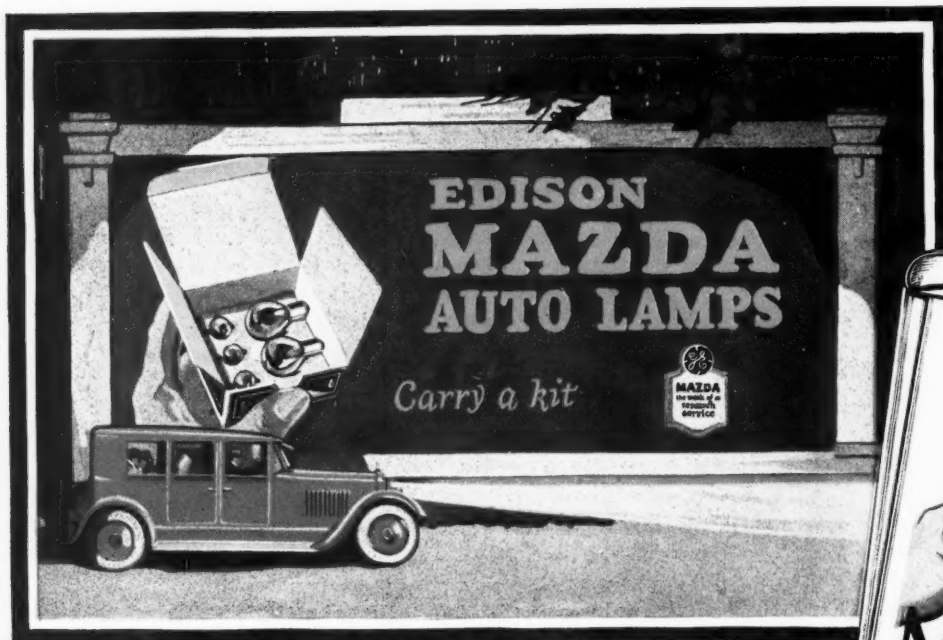
WILLIAMS BROS. AIRCRAFT CORP.

25th and Potrero Avenue  
San Francisco, California

## WILLIAMS ACCELERATORS FOR FORDS

and  
looks





This page shows how Edison MAZDA Auto Lamps and the Kit are being advertised this fall—great 24-sheet posters which cover the towns and cities, and color pages in farm magazines which reach the car owners in the rural districts.



## Tie up with these and sell 5 instead of 1

**E**DISON MAZDA Auto Lamps are one of the most extensively advertised auto accessories.

This fact in itself makes the handling of these lamps an attractive proposition. But remember that probably nine out of ten of all car owners use MAZDA Lamps in their homes and regard "MAZDA" as a synonym for quality and dependability.

So the phrase, "You have them in your home—put them on your car," is the strongest possible argument in selling Edison MAZDA Auto Lamps; and the 5-lamp Kit, plus the argument of safety and convenience, enables you to sell five lamps instead of one.

See your jobber, or write directly to the Edison Lamp Works of General Electric Company, Harrison, New Jersey.



# EDISON MAZDA LAMPS

A GENERAL ELECTRIC PRODUCT